FEEDSTUFFS

★ A WEEKLY NEWSPAPER ★

FOR THE FEED MANUFACTURER, JOBBER, BROKER and DEALER

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Foundation for Hope on Delaney Amendment Seen

By JOHN CIPPERLY
Feedstuffs Washington Correspondent

WASHINGTON — For the first time, there is a break in the storm clouds which have enveloped the feed and chemical industries following the Food and Drug Administration statement of policy on food additives after the enactment of the Delaney Amendment at the closing session of the 85th Congress.

This small ray of clearing skies is to be found in proposed bills on the color additive amendments pending in Congress. These amendments would fix controls on their use along the lines of the Miller Amendment in regard to pesticidal chemicals, but in the case of the bill introduced in the House by Oren Harris (D., Ark.) it contains the provisions of the disputed Delaney Amendment to the food additive bill.

However, in the Senate, a parallel bill has been offered by Lister Hill (D., Ala.) which refuses to accept the Delaney Amendment involving alleged carcinogens on the grounds that when the Delaney Amendment came before the 85th Congress, FDA officials refused to back the Delaney proposal.

While this conflict between the House and Senate bills on the color additive amendment is unlikely to get formal congressional attention at this session of the 86th Congress, it does lay the foundation for a renewed

(Turn to AMENDMENT, page 97)

USDA Planning Storage Cost Study

Industry Data Would Provide Basis for UGSA

By JOHN CIPPERLY
Feedstuffs Washington Correspondent

WASHINGTON—Spurred by the House agriculture committee, the U.S. Department of Agriculture is now contemplating a field cost survey of grain storage costs by commercial warehousemen. USDA plans to send 120 men into the field to ask storage men to submit confidential company data on which USDA may build some working basis for determining storage costs when a renewal of the Uniform Grain Storage Agreement is considered in July of next year.

USDA recently submitted to its warehouse industry advisory committee a tentative draft of the proposed survey questionnaire, which USDA hopes warehousemen will answer, but it is now understood that this form has been withdrawn and is to be revised to meet possible objections by the Bureau of the Budget.

(Turn to STORAGE STUDY, page 96)

FEEDSTUFFS *Features This Week*

POULTRY MANAGEMENT: A report on a survey of size and efficiency of laying flocks in northeastern Indiana by Purdue agricultural economists appears on **page 10.**

BROILER NUTRITION: An article concerning a test in Maryland to obtain more information on the performance of broilers fed simplified corn-soybean meal type rations starts on **page 28.**

PRODUCTION: Facilities of a bulk station installed by a farm store in Minnesota are described on **page 36.**

RESEARCH: A description of investigations of feed commodities assigned to the Northern Regional Research Laboratory in Illinois begins on **page 44.**

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Lower Hog and Beef Prices Offset by Egg, Milk Upturns

WASHINGTON—With most farm commodity prices declining, the index of prices received by farmers dropped 1% (2 points) during the month ended July 15 to 240% of its 1910-14 average, the crop reporting board of the U.S. Department of Agriculture reported this week.

Primarily responsible for the decline were lower prices for hogs, beef cattle and other commodities. Partially offsetting declines were higher prices for eggs, milk and cotton. The mid-July index was 4% below the year earlier and the lowest since December, 1957.

Of greatest significance during the first two weeks of July was the additional $1@1.25 loss in hog prices, bringing the price received by farmers for hogs to the lowest level since November, 1956. Marketings of hogs increased about 20% above year ago levels.

Cattle prices also weakened moderately during the early July period, even though there was no great change in the supply. One of the developments in the cattle market recently is the discrimination against weighty cattle. While middle-grade cattle prices have remained fairly steady, prices for over-fed and under-fed have suffered.

(At Chicago Aug. 5 cattle and hog prices slid. Most hogs were weak to 50¢ lower. Choice grade steers dropped to a 1959 low.)

(Turn to PRICES, page 93)

AFMA Nutrition Award Won By Dr. Hans Fisher

AMES, IOWA—A New Jersey scientist has been selected by the Poultry Science Assn. as the recipient of American Feed Manufacturers Assn.'s 1959 award of $1,000 for outstanding contribution to poultry nutrition research.

Dr. Hans Fisher, poultry nutritionist, Rutgers University, received the award at the 48th annual meeting of the Poultry Science Assn Aug. 4-7 at Iowa State University. William T. Diamond, secretary-treasurer for AFMA, made the presentation.

Dr. Fisher is particularly noted for his research on the amino acid requirements of poultry, and the influence of cholesterol, fatty acids and

(Turn to AFMA, page 97)

Pelleting Costs to Be Discussed At 1959 Feed Production School

KANSAS CITY — A "fact-revealing" report on "Cost of Pelleting" will be given at the 1959 Feed Production School to be held Sept. 23-25 in Kansas City.

The report on this original research project, sponsored by Feed Production School, Inc., will be presented by A. J. Bohl, executive engineer for the Wolf Management Engineering Co., Chicago.

Mr. Bohl, in discussing the study, had this to say:

"Preliminary analysis of studies taken in several mills throughout the country indicates the need for better equipment and labor utilization. Unsound engineering in plant layout, equipment capacity and line balance are causing innumerable delays in the manufacturing process. The results of such delays, of course, are low equipment utilization, low labor productivity and a corresponding increase in costs.

Labor Efficiency

"Some of the better managed mills are realizing a labor productivity index of 70-75% of standard. This, of course, is normal for operations on a day work basis, but in the majority of the mills studied labor productivity was considerably less, due to a great extent to conditions beyond the control of the worker. These conditions are the results of delays and down-time caused by unsound mill planning.

"Mill planning to engineers means simply the planning of layout to facilitate handling of both raw and finished materials, and the planning of the production line to assure a balanced product flow at all times.

"This is sometimes difficult. However, it is more difficult to remove

(Turn to PELLETING COSTS, page 96)

SOUTH AMERICAN MILL PLANNED

VALENCIA, VENEZUELA — Construction of a feed mill will start soon at Valencia. The 10-story plant is designed to produce a complete line of feeds at the rate of 60 metric tons an hour.

Hollywood Invades Ranch

Feedlot Becomes Movie Lot

BRACKETTVILLE, TEXAS — The ranch of J. T. (Happy) Shahan, well known Texas cattleman and feed manufacturer, will be the scene of "the biggest western movie ever put on film," according to a recent announcement of a movie-making firm called Batjac Productions, which is owned by the cinema star John Wayne.

The budget for the epic about Texas' struggle for independence from Mexico, called "Alamo," has been set at $8 million.

Filming is scheduled to get underway Sept. 10 on the 22,000-acre Shahan ranch near Brackettville, Texas, which will be used for all exterior shots. A complete reconstruction of San Antonio as it was in 1836 has been built on the ranch. Film producers say it will be left to Mr. Shahan.

Mr. Shahan is owner of the La Pryor (Texas) Milling Co. and is active in feed manufacturing in Texas. He was president of the Texas Feed Manufacturers Assn. a few years ago.

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Top of the Hopper

WASHINGTON OBSERVERS are taking a slightly more hopeful view of the future for veterinary drugs affected by recent Food and Drug Administration action. (See story on page 1.) Hopes that the present impasse stemming from the Delaney amendment may be resolved at the foundation of the problem—the legislation itself—stem from introduction in the Senate of a bill to amend color additive legislation. The Senate bill would eliminate the arbitrary restrictions imposed by the Delaney amendment, and it is thought that consideration of the issue as it applies to color additives could also open up an opportunity for Congress to reconsider the spot the feed and chemical industries have been placed in by the Delaney amendment and current FDA policy.

The prospect of accomplishing something of significance on the legislative side is the longer-range approach. It is doubtful that the matter will get much attention during the current congressional session. What is still required, industry feels, is some tempering of FDA policies to remove insofar as possible present confusion and inequities until a long-range solution is found.

DROUTH CONDITIONS in the West may help stave off the expansion of cattle numbers which many forecasters feel could be dangerous to the cattle economy in the next few years. Western Livestock Journal observes that "it seems pretty definite that the much-discussed buildup in cattle numbers may be slowing down if not actually stopped." The publication reports that almost all of the range country west of the Rocky Mountains is suffering from serious drouth and that even in areas where grass conditions are up to normal there seems to be a general disposition to cull cow herds in a normal fashion this fall.

THE AMERICAN Poultry & Hatchery Federation is going south next year. It will hold its convention and exposition in Memphis. Association officials comment that selection of this site is appropriate: "The center of the nation's poultry industry is swinging toward the South. It is right and proper that our big annual convention should recognize this." Not since 1931 has this gathering been held in Dixie. An attempt was made to use New Orleans facilities in 1942, but when World War II broke out the auditorium was taken over by the military.

A FIELD SURVEY to determine storage costs of grain elevators is planned by the U.S. Department of Agriculture as a preliminary to negotiations for renewal of the Uniform Grain Storage Agreement next year. The move may well be anticipated with mixed feelings by grain and feed men. On the one side is knowledge that some members of Congress have been strongly critical of payment rates and concern that the survey could tend to lean toward appeasement of the critics. On the other hand, the study could provide an opportunity to demonstrate that higher rates under the agreement are justified because of rising costs in the storage industry. Also, there is apparent concern that information gathered in the survey may not be held in strict confidence.

John Cipperly, Feedstuffs' Washington "eye," predicts it is probable that the attack on the storage rates will die abornin' next year. "They have political sex-attraction to the Democratic opposition to Secretary Benson now, but when the congressmen hear from the folks back home, as is now apparent

(Turn to **TOP OF THE HOPPER**, page 97)

How's Business?

AN EVERY WEEK REVIEW OF FORMULA FEED BUSINESS VOLUME, INCLUDING PRICE, SUPPLY AND DEMAND TRENDS

Formula feed demand slipped to slightly lower levels in most regions this week, and manufacturers were beginning to trim production and make slight downward adjustments in feed prices. Although demand is slower now than in recent weeks, manufactured feed volume is holding up well compared to the same period in August last year. Feeders seem to be preoccupied with the rush of the present and coming harvesting, and their attention apparently has been diverted from the usual buying of mixed feeds. Most mixers are holding inventories down. The index of wholesale feedstuff prices declined 1.2 points to 79.4 this week as against 80.6 last week and 88.2 a year earlier. The feed-grain index, on the other hand, edged up half a point to 70.8, compared with 70.3 last week and 71.5 a year ago. The hog-corn ratio, based on Chicago prices, stood at 11.1 this week—up slightly from 10.8 a week ago, but sharply below the 16.9 established for the comparable week last year. (Ingredient prices in detail on pages 94-96.)

Northwest

The feedstuffs market in this region continued in the seasonal doldrums this week as ingredient demand slowed and manufacturers began production cutbacks. Some plants lowered feed prices slightly.

Slower formula feed movement seems to have been brought about by the rapidly approaching grain harvest, which has feeders so busy their attention has been diverted from buying manufactured feeds. There was some indication that dry weather has gotten the farmer out of the mood for spending much money at the feed store. Narrowing of feeders' operating margins shifted the feeding emphasis of hog and poultry producers away from balanced rations and toward homegrown feeds.

Mixers, for the most part, are holding inventories down, in view of slower formula feed movement.

Although current feed demand is below July's, some mixers report that business is better than August of last year.

Southwest

With very few exceptions, formula feed manufacturers in the Southwest are finding business this week as slow or slower than it was last week. Plants are operating four to five days, but those with enough orders to justify a five-day run note that it will be a "weak" five.

This is typically a slow time of year. Reasons for this slowness are not obvious, most mill people point out. Hog feed volume has been reduced somewhat, apparently because of lower hog prices and the feeling by farmers that good feeding of their pigs will not particularly benefit them with prices low. An improvement in the feeding ratio would probably bring a pickup in swine feed movement.

Turkey feed volume continues to be a bright spot, expanding steadily as birds grow.

Otherwise, general feed volume is quite slow. A small amount of interest has been shown in cattle feed. The lush grass helps discourage any buying. Some feed men believe that dealers and farmers have held back on purchases to await price declines. County fairs and such farm chores as haying are also occupying interests in some areas, keeping farmers from stocking up on feed.

Prices for next week on formula feeds are expected to be unchanged to down as much as $2 ton on some items.

Northeast

Manufacturers trimmed their running time as demand for formula feeds slowed a little after the previous week's good turnover. And the trade doesn't look for any improvement next week.

Farmers in this region are preoccupied with their harvests and some customers were "scared away" by the drop in soybean oil meal in preceding week.

Rainfall in this area has been a hit and miss affair. Some pastures are dry but others have received moisture. As a result demand for feed was only moderate.

Broilers in the East ranged from 15@17¾¢ lb., but there was a disturbing low of 14½¢ reported in Georgia. When prices begin to fall in the South, the move generally spreads to the Northeast. Eggs were steady to firm.

Egg mashes accounted for the bulk of the sales. Turkey feeds moved into second place, followed by dairy feeds and broiler feeds.

Ingredient prices moved sideways during the week, with supplies plentiful.

Running time of formula feed manufacturers declined to 32 hours from 40 hours in the previous week, with one feed mill still out on strike.

Southeast

All types of feed business in the Southeast are reported to be on the slow side this week.

Southern broilers sold steady last week at a rather low level for this time of year. Buyers in most states paid 15¢ lb. for broilers f.o.b farms, with chick replacements in all states slightly decreased from the previous weeks.

With new crop production of cottonseed meal only about one week to 10 days off, most feed ingredient buyers are trying to make their present stocks last until the mills are in new crop production, which should have some bearing on the asking prices for soybean meal. They are only buying on an as-needed basis.

There is still a fairly good demand for peanut meal, but the mills are unable to offer any meal until the government releases additional peanuts.

Many producers of beet pulp in the Midwest reduced their prices this week to move what stocks they have on hand before the new production season and, at the prices quoted, Florida citrus pulp will not be competitive in the New England markets, which may have some effect on the asking prices in the Southeast.

With good supplies of corn and practically no demand, prices have declined to $1.42 bu., delivered central Georgia points.

Central States

The formula feed situation in this area as of the first week in August does not differ to any material extent

(Turn to **MARKETS**, page 99)

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BROILER LUNCHEON—Barbecued broilers were appropriately served for lunch during the University of Illinois All-Industry Poultry Day recently. Dr. H. F. Scott, head of the university poultry department, serves (left to right): Charles Meier, Nashville, Ill.; Dr. G. F. Godfrey, Honeggers' & Co., Inc., Forrest, Ill., and Dr. R. L. Baker, agricultural marketing specialist from Pennsylvania State University. All four men were speakers on the program.

Marketing, Production Trends Discussed at Illinois Event

URBANA, ILL.—Pressure from consumers through retail stores is causing much of the rapid swing to contract egg production, according to Dr. Ralph L. Baker, agricultural economist at Pennsylvania State University.

Dr. Baker spoke to more than 200 producers, hatcherymen and industry representatives at the 12th annual Illinois All-Industry Poultry Day at the University of Illinois recently.

He pointed out that once consumers get high quality eggs at their retail outlets, they quickly become dissatisfied with any others. As a result, retailers are anxious to buy eggs produced under a quality-control program and will often pay premium prices to get them, especially in the areas around large cities.

Another pressure, Dr. Baker said, toward integrated egg programs is the ability of some producers to reduce production costs through either contract marketing or contract production systems, or owner-integrated operations. This causes the trend for some producers to get larger, and some marginal producers to go out of business.

Small Producer Status

Quality-control, contract egg production and marketing do not mean the end for the small producer, however, Dr. Baker pointed out. Many large operations are doomed to failure because they are not willing to put in the extra working hours that many small producers can, and large operators may not have the management ability needed for success.

The first requirement for successful integrated egg operations is a good market, the economist said. Then, once a high-quality product is supplied to that market, the supplier must continue to produce high-quality eggs or he will lose the market.

Putting more hens on more farms to produce more eggs will not solve the problem, he said. Sales are not keeping pace with production now. But integrated operations that will cut production costs and supply the markets with a high-quality product can succeed, where the poor manager who does not exploit his marketing opportunities will go out of business.

Lower Protein Diets

In another section of the program, Dr. Don Bray, university poultry researcher, told the guests that they can expect a trend towards lower protein diets for their flocks in the future.

As protein levels in the diets go down, feed manufacturers and producers will have to pay closer attention to meeting vitamin needs, Dr. Bray said. And the lower protein levels will also bring faulty processing of protein concentrates more vividly to the attention of producers—if there is faulty processing.

There is no one answer to the question of what percent protein to put in a laying ration, Dr. Bray pointed out. The reason is that proteins are different in the amounts of the amino acids they contain. It is the amino acids, not protein as such, that the laying hen uses for her production.

The National Research Council has reviewed the evidence and has compromised on 15% of the ration as the protein requirement for layers and breeders. This is a convenient way of saying, "If one uses combinations of ingredients normally used to formulate laying rations, a ration containing 15% of protein should provide an adequate intake of each of the amino acids for sustained egg production," the poultry researcher said. It is not hard to design adequate and inadequate 15% protein diets, or adequate or inadequate 12% protein diets.

In recent years the food processing industry has become increasingly aware of the ways in which the processing method affects the nutritional value of foods. The soybean processing industry has let the performance of the chick tell them the best com-

(Turn to ILLINOIS, page 97)

Indifferent Demand Influences Oil Meal

MEMPHIS—The oil meal market during the past week was influenced by various factors, including an indifferent demand for the cash article which discouraged speculative liquidation.

Also influencing the market on the other side was talk of shutdowns of processing plants and there was a small amount of short covering.

Feed business continues slow in most areas. New crop months have received support from both commission house and trade sources, largely on strength of the soybean market and a definite lack of hedging pressure in these positions was noted.

Most observers view the new crop conversion ratio as unsatisfactory and selling from first hand is not great.

Unrestricted soybean oil meal closed the week unchanged to 50¢ ton lower. Cottonseed oil meal finished the week $1.25 ton lower in the nearby months.

Delmarva Broiler Prices Improve

SALISBURY, MD.—There was a slight improvement in broiler prices in Delmarva last week. The average price paid on the farm was 16.70¢ compared to 16.56¢ the week before.

Across the nation last week activity was dull. Hatcherymen in the 22 reporting states set 42,426,000 eggs. This was 1% less than during the previous week and 3% less than the corresponding week a year ago. Settings were down from the previous week in 11 of the 22 states. The sharpest declines were reported in Georgia, Texas, Mississippi and Missouri.

Broiler chick placements in the 22 states totaled 30,963,000. This was 5% below the previous week and 5% below the corresponding week a year ago. Decreases were reported for 18 states—increases for four states, compared to the previous week. The largest decreases from the previous week occurred in Georgia, Virginia, Arkansas and North Carolina.

According to the Maryland-Delaware Crop Reporting Service, Delmarva producers started 3,554,000 broiler chicks during the week. This was 3% less than a week earlier and 12% less than for the corresponding week last year. The number started was down 21% in Delaware and was 2% less in Maryland, as compared with the same week a year ago. Settings in Delmarva were 1% more than the previous week but 10% less than the comparable week last year.

Marketings in Delmarva totaled 4,170,000 broilers last week. This was 3% more than the previous week but 4% less than the corresponding week of 1958. Marketings were 113% of the number of broiler chicks started nine weeks earlier.

The average price paid for broilers during the month of July in Delmarva was 17.5¢, up half a cent over June. However, a year ago for July the price was 19.5¢ or 10% more. Feed costs for July averaged $4.95 ton, or 4%, less than prices a year ago. Broiler chick prices were down 29%—10¢ during July compared to 14¢ a year ago.

Correction

KANSAS CITY—Through error in reporting in Feedstuffs July 25 two new appointments to the staff of Thompson-Hayward Chemical Co., Kansas City, Robert V. Cree, manager of the firm's feed chemicals division, was inadvertently placed in the Omaha office of the company. Mr. Cree continues his office as in the past at the Kansas City headquarters of the company.

Dr. C. F. Chappel

Dr. T. M. Means

Eli Lilly Appoints New Ag Sales Manager, Research Personnel

INDIANAPOLIS, IND. — The appointment of a new agricultural sales manager and several agricultural research personnel to administrative positions have been announced by Eli Lilly & Co., Indianapolis.

Dr. Charles F. Chappel has been appointed manager of agricultural sales, according to O. B. Swearingen, director of sales for the agricultural and industrial products division.

Dr. Chappel has been associated with the company since 1955 when he joined the firm as a biochemist in charge of animal nutrition research. In 1958 he was named technical specialist in the agricultural and industrial products division. He was employed by the Beardstown (Illinois) Mills Co. as director of research and nutrition before joining Lilly.

Dr. Thomas M. Means, former assistant head of animal nutrition research, has been named head of agricultural research, according to Jean F. Downing, director of the agricultural research division.

Dr. Means has conducted animal nutrition investigations since joining the firm in 1956. Prior to that, he was an instructor in animal husbandry at Purdue University, West Lafayette, Ind., and was in charge of the university's sheep program.

Named under Dr. Means were Dr. Edwin F. Alder, assistant head of plant science research; Dr. Robert N. Berkman, D.V.M., assistant head of veterinary science research, and Frank O. Gossett, D.V.M., assistant head of animal clinical research.

Kansas City Feed Club Plans Summer Picnic

KANSAS CITY—Plans have been completed for the summer picnic of the Kansas City Feed Club. An indoor "picnic," the event will be held Aug. 15 at the Blue Hills Country Club.

A steak dinner at 7 p.m. will be preceded by a cocktail hour at 6 p.m. Entertainment planned for the evening includes bingo and dancing.

Lard Named Surplus Item; Plan Exports Under PL 480

WASHINGTON — As forecast last week, Ezra Taft Benson, secretary of agriculture, has declared lard in surplus supply, thereby making it available to export programs under Public Law 480, Title I. The next stop, apparently, will be to put pork products under a school lunch program and also, probably, under PL 480 for export.

Secretary Benson's statement indicates a potential export of 550 million pounds of lard for the current calendar year. He cites the attractive current low price for that commodity.

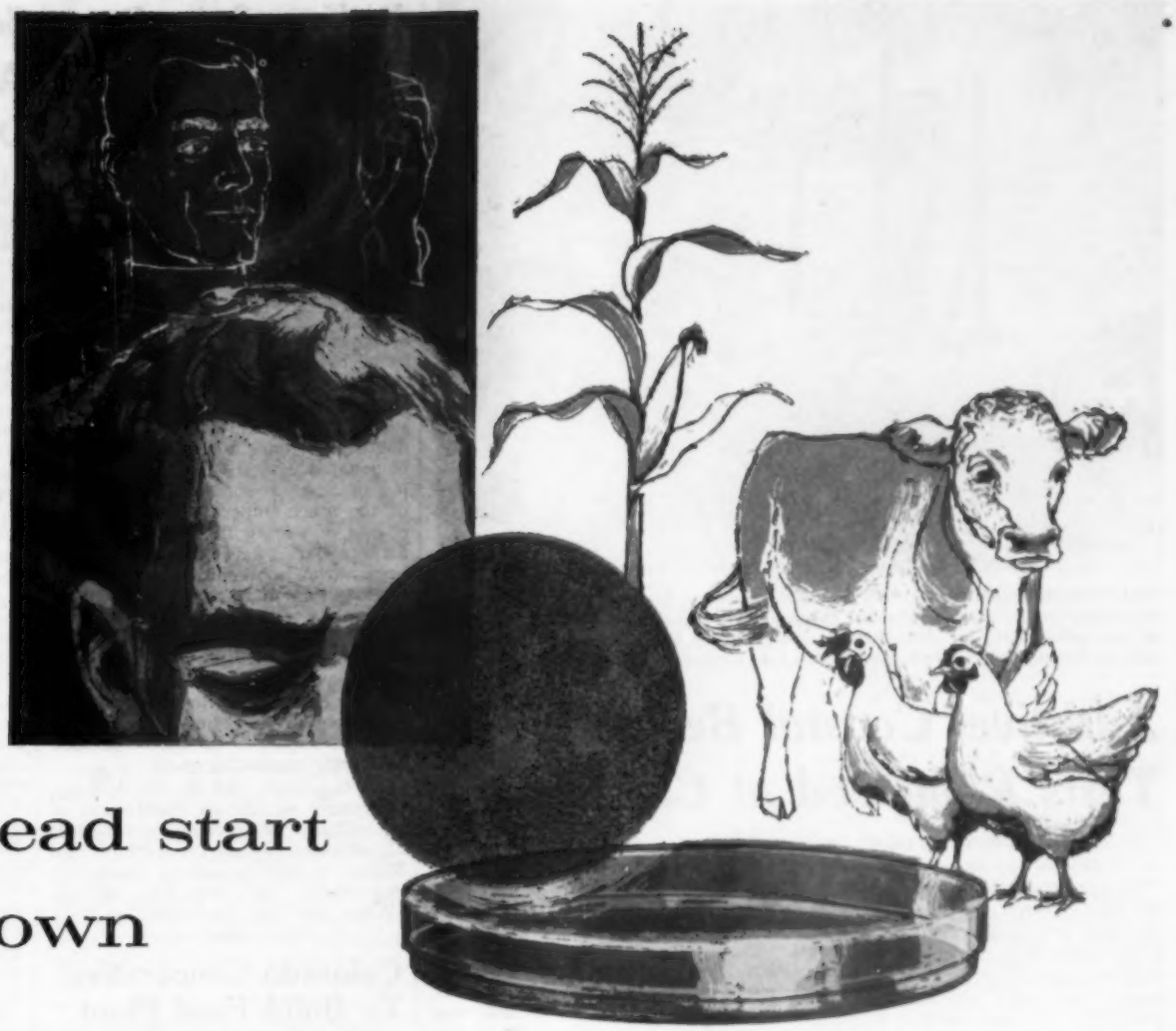
However, within his own organization there is something less than enthusiasm over the export results to be obtained from PL 480 programs. Experts refer to results of the export programs used when lard was on a surplus list in 1956.

When announcing that the U.S. Department of Agriculture will offer lard for export, Secretary Benson again cautioned hog producers of the need for orderly marketing during this period of plentiful supply. He urged processors, wholesalers and retailers to protect the interest of both the producer and the consumer by sharing with them any savings which accrue from handling increased volume.

If USDA steps up exports of lard by programming it under Title I, PL 480, it will be possible for some dollar-short foreign countries to use their own currencies.

In the fiscal year of 1956, more than $15 million worth of lard was merchandised under foreign currency authority. These sales represented over 180 million pounds of lard.

USDA said lard exports have been increasing materially in recent months and, with supplies and depressed market prices, are expected to continue increasing.



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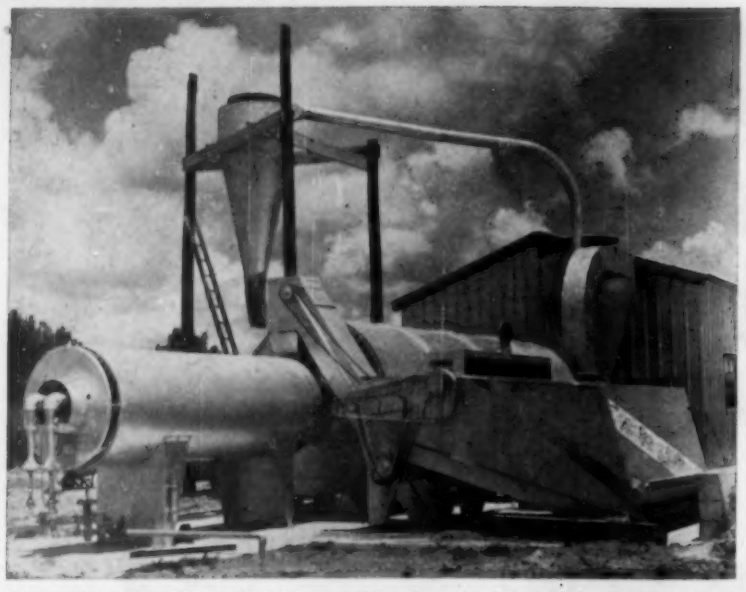

COASTAL BERMUDA GRASS PLANT—Growing interest in the Southeast regarding the feeding of Coastal Bermuda grass has prompted construction of this pilot plant for dehydrating and pelleting the crop for experimental purposes at the Edisto station of Clemson Agricultural College, Blackville, S.C.

Additive, Coastal Bermuda Tests Reviewed at Clemson

By LEWIS F. CATO
Clemson Agricultural College

BLACKVILLE, S.C.—More than 300 persons attended the recent field day held at Clemson College's Edisto Experiment Station, Blackville. This field day was a joint endeavor of the animal husbandry and agronomy departments to show research in progress and to give reports on work already done.

Research with beef cattle was started in 1955. Plans are to establish a purebred herd of 50 Angus brood cows and also a similar sized herd of Herefords as fast as good animals are available from other units of the Clemson experimental system. These herds will be used in progeny testing work and also as a source of steers of known breeding for use in winter dry lot feeding tests wherein newly released additives and supplements are used.

The first work with cattle at the station was on the use of stilbestrol in a three-year test. The stilbestrol was administered orally and resulted in an increase of one-fourth pound more per head per day than did the check lot steers. The use of this material resulted in decreasing the cost of gain by 1¢ lb. There was no material difference in the carcass grade between the stilbestrol fed group and the check group.

Stilbestrol was added to the ration at the rate of 10 mg. per head per day. Corn, oats and cottonseed meal made up the basic ration with Coastal Bermuda fed free choice. The cattle were fed for a period of 112 days.

Liquid Morea Tests

One year's work has been completed with steers fed liquid Morea in dry lot. Two replicate groups of five steers each received a concentrate ration consisting of 12 lb. hammered ear corn, 1 lb. alfalfa pellets (17% protein), 4 lb. No. 2 shelled corn, and 1½ lb. of cottonseed meal (36% protein). Two other groups of five steers each received the same ration except for Morea fed free choice being substituted for cottonseed meal.

There was no significant difference in the average daily gain or the daily feed consumption between the two lots. There was also no significant difference between treatments with regard to final carcass weight and carcass grade. This is the result of only one year's work. Plans are to continue this work next year.

Coastal Bermuda Grass

There is much interest in the Southeast in regard to dehydrating and pelleting Coastal Bermuda and other grasses and legumes for feed. The Edisto station has a plant under construction now to furnish pellets for experimental work.

Many farmers were interested in this phase of the field day and watched the dehydrator in action. The pelleting machine has not been received and set up as yet. The dehy-

(Turn to COASTAL BERMUDA, page 98)

Texas Poultry Assn. To Meet Aug. 18-20

COLLEGE STATION, TEXAS — The 36th annual meeting of the Texas Poultry Improvement Assn. will be held in Dallas, Aug. 18-20, at the Baker Hotel.

W. H. Schwedler, president, National Turkey Federation, Portland, Ore., will discuss, "Making Turkey Opportunities Today and in the Future," Aug. 18.

On Aug. 19, M. J. Framberger, general manager, American Dairy Assn., Chicago, will give the poultrymen a "Blueprint for Sales Success." Ray E. Parmenter, president, American Poultry & Hatchery Federation, Franklin, Mass., will speak on "Factories—Industrial vs. Poultry" Aug. 20.

Other speakers will include Dr. L. C. Grumbles, head, department of veterinary microbiology, Texas A&M College and Dr. W. F. Kruger, John E. Quisenberry and J. R. Couch, of A&M's poultry science department.

A panel on Aug. 20 will discuss some of the problems of broiler marketing. Panel members will be C. D. Hawks, general manager, Arkansas Poultry Federation, Little Rock; Arnold Sembera, meat supply manager, Dallas division of Safeway; F. Z. Beanblossom, poultry marketing specialist, Texas Agricultural Extension Service; Alvin East, L. East Produce Co., Austin and Joe Fechtel, Western Hatcheries, Dallas.

Each afternoon, from 1:30 to 3:00 p.m., Ross C. Shannon of Ross C. Shannon & Associates, St. Louis, Mo., will conduct sessions on "Sales Management Counsel."

Elma Feed Man Dies

ELMA, WASH.—Walter E. Heisel, local councilman and businessman, died recently following a long illness. Mr. Heisel was co-owner of the Elma Feed Co. with Wes Hall. Surviving are his wife, Elizabeth, and a brother, Carl G. Heisel of Beaverton, Ore.

Michigan Swine Day Is Scheduled Aug. 13

EAST LANSING, MICH. — Farmers and others interested in pork production will have a chance to see and hear about the latest in swine care and feeding at the Michigan State University Fourth Annual Swine Day Aug. 13.

The program will include tours showing experiments and feed lots with the latest equipment, and talks by midwestern swine experts.

Climax of the day will be the sale of superior tested boars from the swine evaluation station.

Visitors arriving between 9:30 and 10:30 a.m. at the swine farm at the south end of Farm Lane will be conducted on tours seeing experiments of pelleted vs. meal rations, the raising of hogs on slatted floors, effects of too much minerals in the ration, effects of adding fiber to the ration after 100 lb., developing meat type hogs through breeding research and boar testing in the swine evaluation station.

A display of modern hog equipment will be open for inspection in the livestock pavilion.

"The Feeder Pig Business" will be the topic of an address by Norval Dvorak, manager of the Wisconsin feeder pig marketing co-op.

D. G. Jedele and F. W. Andrew, University of Illinois department of agricultural engineering, will discuss "Pushbutton Swine Production." Ed Miller, of MSU's animal husbandry department, will ask hog growers "What Are Your Problems?"

Colorado Cooperative To Build Feed Plant

MONTROSE, COLO.—Plans have been announced for a modern feed-manufacturing plant and grain storage elevator to be built at Montrose by Farmers Union Supply to replace the structure destroyed by fire a year ago.

The co-op feed supply firm serves the central Western Slope. Besides grain storage and feed manufacturing, seed-cleaning services also are provided for more than 1,100 members.

Frank Casias, manager, said overhead bins for feed manufacturing and efficient equipment will triple the capacity, hasten processing and reduce labor.

The new pellet mill is expected to be the biggest part of the business. With custom pelleting, the co-op will mix and prepare pellets according to specifications and formulas for customers.

SOWS' UTERI REMOVED FOR BIRTH OF PIGS

PETIT JEAN STATE PARK, ARK.—The success of University of Nebraska scientists in removing the uteri of pregnant sows when birth of their pigs was due was revealed by Dr. William H. Beckenhauer, Lincoln, Neb., associated with Northern Laboratories, at the recent annual convention of Arkansas Veterinary Practitioners here.

Pigs, still in the uteri, go through sterile solutions and are kept in sterile quarters until they are weaned. Dr. Beckenhauer said this practice reduces death and disease losses.

After weaning, the pigs go to farms which have housing facilities specially cleaned and prepared for their care. The result, Dr. Beckenhauer said, is that the pigs become market hogs completely without disease.

He said the system is not practical for all pig farrowings because of the loss of the sow for breeding purposes. But, Dr. Beckenhauer noted, pigs born under these conditions could provide the foundation for herds apparently free of disease.

Selling Discussed At New Mexico Dealers Meeting

LAS VEGAS, N.M.—Sales management and salesmanship were major topics of the recent mid-summer meeting of the New Mexico Grain & Feed Dealers Assn. at Las Vegas.

Instead of the usual program on varied research and business problems, the whole two-day session was devoted to sales seminars by Bob Bales, Phoenix, Ariz., business consultant. The first day was devoted to two management training sessions, and the second day to a single sales clinic. "Good salesmanship means getting to know your customers, their needs, and their operations," Mr. Bales said.

The management sessions took up such topics as the art of productive planning; job description; merit ratings; self management; customer management; morale and motivation; competition, incentives, contests, and sales meetings.

A number of the members brought their key employees to the sessions. Attendance totaled 75, a record attendance for the association's summer meetings, said Parley Jensen, executive secretary.

The association's winter meeting will be in Albuquerque, N.M., this January. Dates and place will be announced later.

The group named W. H. Bullock, vice president, to take the place of Charles B. Boreing, who has resigned to move to Alpine, Texas. Mr. Bullock is with E. B. Bullock & Sons, Artesia, N.M.

Clarence Worley of Clovis, N.M., association president, was in charge of the summer meeting.

Poultry Institute Scheduled Aug. 17-22

GAINESVILLE, FLA. — The 18th annual Florida Poultry Institute has been scheduled for Aug. 17-22 at Camp McQuarrie, near Ocala, Fla., it has been announced by J. S. Moore, poultryman with the Florida Agricultural Extension Service.

The six-day program will stress the economics of the Florida poultry industry, and future growth. Poultry nutrition, diseases, management and marketing will be discussed in detail.

"Good Management Helps Meet Competition" is the theme for this year's institute. The theme will be carried out in discussions of intrastate competition, as well as pressure from out-of-state poultrymen.

In addition to staff members from the extension service, agricultural experiment station, and University of Florida poultry department, 11 out-of-state speakers will appear during the week.

Guest speakers will include John Weeks, Cosby-Hodges Milling Co.; Curtis Collier, Poultry & Egg National Board; J. H. Hare, Chas. Pfizer & Co., Inc.; Dr. W. W. Cravens, McMillen Feed Mills; Dr. E. I. Robertson, John W. Eshelman & Sons, and Dr. Jack T. Tumlin, University of Georgia.

Other speakers will be Edward Karpoff, Agricultural Marketing Service; T. W. Millen, Poultry Farms Research Laboratories; A. Howard Fingar, Sunnybrook Poultry Farms, Inc.; C. F. Parrish, North Carolina State College, and Cletis Williams, Honegger Breeding Hatchery.

The event is sponsored by the Florida Agricultural Extension Service and the University of Florida. Registration begins at 2:30 p.m., Aug. 17. In addition to planned daily programs, there will be a number of recreational activities, including a fishing contest.

Camp McQuarrie is located about 35 miles east of Ocala in the National Forest, on the Ocala-Deland highway.

Hog Marketing Station Opened; Another Planned

TIPTON, IOWA—The first hog marketing concentration station owned and controlled by farmers is now operating here—and enough hogs have been signed up to assure the opening of another concentration point at Washington, Iowa, according to the Iowa Farm Bureau Spokesman.

Hog producers in the Tipton area July 21 delivered 344 slaughter hogs to the new station, which is affiliated with the Farm Bureau. In the Washington area, a final, all-out drive July 23 to establish another hog marketing station was successful. The Iowa Farm Bureau Spokesman said interest in concluding the drive was high as teams acquired agreements covering 9,000 additional hogs to bring the total number to more than 40,000.

The Washington area advisory committee working with the Farm Bureau Livestock Corp. will start immediately on plans to build a second marketing yard.

The two concentration points are owned by hog producers who invested $1 per head to build their own marketing organization. The total investment by each participating farmer is determined by the number of slaughter hogs he expects to market through the station during the next 12 months. The $1 per head fee is paid only once. Participants sign a three-year marketing agreement.

The Iowa hog marketing stations have an agreement with the Illinois Livestock Marketing Assn. which is selling to approximately 60 processors across the nation. The average Iowa hog producer has only 3-5 local points bidding for his hogs.

Northwest Retail Group Sets Session

MINNEAPOLIS—A tentative program for the Aug. 21 Northwest Retail Feed Assn.'s Bull Session on cutting costs has been announced. The event is to start at 10 a.m. at the Elks Club, 14 N. 4th St. here. The meeting will be adjourned at noon, resumed about 1:15 p.m. and closed about 4 p.m.

Speakers and their subjects for the tentative program follow:

- Lyle Kuhlman, Byron (Minn.) Elevator, will explain how he uses office machines to speed up operations and save time and money.
- Tom Ibberson, T. E. Ibberson Co., Minneapolis, will show how costs can be kept down in new construction and in making repairs and remodeling.
- Keith Johnson, manager, Farmers Elevator Co., Elmore, Minn., will review steps taken by his firm to operate a fleet of 14 trucks economically.
- Carroll Manahan, John Manahan Co., Chatfield, Minn., will offer some ideas on how to speed up operations and to use equipment and personnel more efficiently by means of a shorter work week.
- Wendell Lenton, manager, Farmers Elevator Co., Stewartville, Minn., will explain his maintenance program which keeps his employees "on their toes" and which has resulted in a constantly declining number of shutdowns and loss of time due to improperly serviced equipment.

Following each talk the session will be opened to questions from the floor.

Alfalfa Mill Bought

LEXINGTON, NEB.—A group of Nebraska dehydrators headed by R. L. Robertson, Lexington, has purchased the York (Neb.) Alfalfa Mill. The plant will continue to operate under the same name, with Loren Hogan as manager.

Trends, Changes to Be Discussed at Dairy Day

CASTALIA, OHIO—The future of dairying and trends that affect the welfare of dairymen will be aired at a Dairy and Field Crops Day here Aug. 14.

Dr. Elmer F. Baumer, department of agricultural economics, Ohio Agricultural Experiment Station, will point out the speed and extent of change in such factors as numbers of milk producers and average size of producer. He will evaluate these trends in terms of the future.

A display devoted to tips and aids for dairymen will deal with the effect of size on costs, variations in cost of feed production, the effect of size on overhead cost and several other cost reduction possibilities.

Making high quality hay, breeding for high protein in milk, housing experiments, sire influences on performance and high roughage for calves will round out dairy topics.

Drainage, rotations, controlling blackbirds, minimum tillage, chemical weed control and fertilizing sugar beets will also be discussed.

Cargill to Expand Terminal Elevator

CHATTANOOGA, TENN.—Planned addition of 140,000-bu. storage space to the 220,000-bu. capacity terminal elevator operated at Chattanooga by Cargill, Inc., Minneapolis, has been announced by William M. Berger, branch manager for the grain firm.

Construction will begin next week he said, with completion scheduled by Oct. 1, in time to handle the annual fall flow of grain downriver from midwestern production areas.

"This new facility, representing a 63% increase in our storage capacity, will make available a more consistent supply of grain to Southeast consumers. It will be particularly valuable to broiler producers, feed manufacturers and others in the business of agriculture," Mr. Berger said.

The new space, two 70,000-bu. steel bins connected by conveyors to the elevator's work house section, will connect into present truck, railroad and barge handling equipment on the Tennessee River.

Contracts for the steel tanks have been let to the Sapulpa Tank Co. of Oklahoma, and bids on foundation work are expected soon.

Colorado Firm's Sales For Year Hit New High

DENVER, COLO.—Colorado Milling & Elevator Co. hit a new high in sales in its latest fiscal year, according to Robert M. Pease, president.

Sales for the fiscal year ended May 31 came to $126,998,776, compared with $103,597,108 in the previous year. Net income was up to $1,362,724 or $2.47 a share.

A somewhat larger than usual demand for commercial animal feed contributed to the year's gains, Mr. Pease said.

The company and subsidiaries now operate 17 flour mills with an aggregate daily capacity of 57,650 cwt., fourth largest in the nation in that respect. Aggregate storage capacity is 24,630,000 bu.

Midwest Alfalfa Firm Elects Vice President

TOPEKA, KANSAS — Martin F. Trued, Progress Products Co., Inc., Topeka, has been elected a vice president of Midwest Alfalfa Blenders, Inc., it was announced recently by Raymond E. Bert, Bert & Wetta, Maize, Kansas, president of the Midwest firm.

Other officers are J. B. Merryfield, Abilene (Kansas) Alfalfa, vice president, and W. T. Thompson, Thompson Dehydrating Co., Topeka, secretary-treasurer.

NBC Undertakes Study Of Broiler Marketing

OCEAN CITY, MD.—The board of directors of the National Broiler Council this week reconfirmed the role, it believes, sales promotion must play in building a sound economic structure for the broiler industry. And the NBC board added to its projects a full study of industry marketing methods and market and product research.

In addition to making way for the council's fall promotion, Golden Chicken El Dorado, which had been previously approved by the board, the group: (1) Set the stage to start negotiations for a 1960 Corn Crisped Chicken campaign, (2) stepped up its participation in the International Trade Development program for broilers, (3) called for a complete program to develop consumer leaflets and point of purchase material usable by members of the broiler industry, (4) began a stronger effort in selling the story of the low calorie content of chicken and (5) voted to develop a 15-minute film suitable for television telling the industry story.

Marketing Problems

Turning to the marketing problems facing the industry, the NBC board voted a complete study of the industry marketing system be made, and that possible alternates be explored, including the possibility of a dressed poultry auction.

In a parallel action, the group voted to explore the possibilities of having developed a long-range and possibly continuing market research study.

It was also voted to appoint a committee to keep close liaison with congressional committees so that the industry may ferret out useful information from these groups, and keep abreast of actions pending which might affect the broiler industry's marketing and sales structure.

In actions pertaining to the operation of the council, the board voted for the executive committee to propose a new method for the election of NBC board members and to present the new plan at the next board meeting.

It was voted to hold a second Broiler Industry Conference in conjunction with the next board meeting to be held in Atlanta during March, 1960.

In other actions, the board voted to discontinue support of the poultry survey committee, recommended contacts be made to major appliance manufacturers to develop a home cooker that can turn out chicken in five to seven minutes, voted to explore studies in the field of precooked or prepared foods using broilers and instructed the staff to begin a study of irradiation and the research necessary to make it applicable to the production and distribution of broilers.

Don Corbett, NBC president, who had opened the board session with a plea for careful analysis of the problems before the board and attempts for constructive actions in those fields where solid accomplishments can be made, summarized the session with this statement:

"I feel this has been an extremely fine and constructive board meeting. The board went to its work and carefully studied possible solutions. Discussion was free and open and ideas put forth got careful consideration. It seemed the group was extremely proud of the job the Broiler Council has done in the past, but also it noted the changing times and strong problems ahead. This group of industry leaders recognized that this industry has deep problems, problems that need study and work at their roots rather than on the surface. They recognized, I think, that nobody else is going to solve our problems for us, and they sought out the points where we can do the most good with the resources at hand, and then set up a program to get the whole thing going fast."

Hales & Hunter Co. Names Research Head

CHICAGO—Dr. Lawrence W. Price has been promoted to the position of director of research and development for Hales & Hunter Co., Chicago, manufacturer of Red Comb-Pioneer feeds. Announcement was made by William H. Garvey, Jr., executive vice president.

Dr. Price joined Hales & Hunter Co. in 1958 as a poultry department specialist. Previous to that he was director of government registrations for the farm and home division of American Cyanamid Co.

He received his degree as doctor of veterinary medicine from Ohio University and holds the rank of lieutenant colonel in the air force.

To Discuss Threat Of Sheep Imports

SAN FRANCISCO — Just how much of a threat to the U.S. domestic sheep industry (32,644,000 head) are New Zealand with 46,026,000 sheep, and Australia with 149,319,000 sheep? Sheepmen from throughout the western states will be on hand to get the answer at the 99th annual convention of the California Wool Growers Assn. at the Sheraton-Palace Hotel, San Francisco, Aug. 13-14.

There, to present the answer, will be some of New Zealand's and Australia's best informed trade experts. A. P. O'Shea, general manager, Federated Farmers of New Zealand, and S. D. Reeves, president of the same group, will participate in a panel discussion on foreign meat imports Aug. 14.

M. A. Drisko, director, livestock and meat products division, Foreign Agricultural Service, Washington, D.C., will participate in the panel, bringing American sheepmen up-to-date on current import figures, comparisons with other years and possible future outlooks.

Firm Adds to Storage

SPRINGFIELD, MINN. — Springfield Milling Corp. is erecting six steel bins with a total capacity of 93,000 bu., according to Trig Helleloid, manager at the mill.

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Grain Trade Opposes Federal Inspection at Canadian Ports

By JOHN CIPPERLY
Feedstuffs Washington Correspondent

WASHINGTON—An abrupt decision by U.S. Department of Agriculture to make available federal grain inspectors for inspection of U.S. grains moving through Canadian ports on the St. Lawrence Seaway has provoked strong resistance from the organized grain trade.

The basis of this protest is that at a recent Washington meeting on this issue, the government officials paid virtually no attention to a proposal by the Buffalo Corn Exchange that it was prepared to conduct grade certifications of U.S. grain exports through Canadian ports under licensed grain inspectors, subject to USDA federal grain inspectors.

The organized grain trade, acting through the National Grain Trade Council, has now taken a firm opposition officially to USDA in a letter to Ezra Taft Benson, secretary of agriculture, calling his attention to the devious methods used in making this decision as to method of inspection.

The NGTC says that USDA has undertaken to use provisions of the Agricultural Marketing Act of 1946, wherein they may use federal inspectors for federal grading of agricultural commodities outside the provisions and controls of the U.S. Grain Standards Act, which primarily limits the use of its inspectors to areas within limits of the continental U.S.

This means to the NGTC and its component members an invasion of the U.S. Grain Standards Act, and a potential threat that through the device of the AMA of 1946, these inspectors may bypass the standards under the old law, and possibly may ultimately turn out licensed inspectors of U.S. grains at interior markets to be replaced by federally-licensed inspectors who may not be bound by the U.S. Grain Standards Act.

In fact, what NGTC is saying is that USDA now takes a cute position in regard to Canadian port inspection, they have opened the door to break down or repeal the U.S. Grain Standards Act. From a re-reading of the AMA of 1946, it may be concluded that USDA can do virtually any inspection service.

Investigation of the background of this rump decision by possibly poorly-informed administrative officers of USDA in the marketing division indicates that there is numerically more opposition to the Canadian port inspection decision than its proponents. But it was taken abruptly and unthinkingly, perhaps, or possibly supported by the various state wheat leagues which believe they can drive through permissive standards for grain exports under Public Law 480, which would bypass the U.S. Grain Standards Act.

There is a strong bloc within USDA which now believes that the Foreign Agricultural Service and the marketing regulatory division will ultimately be compelled to reverse the recent decision, and that such offers as that of the Buffalo Corn Exchange may have to be accepted.

Dawe's Laboratories Opens Micro-Nutrient Blending Operation

CHICAGO — Dawe's Laboratories, Chicago, has announced the opening of a branch micro-nutrient blending plant in Atlanta, Ga. The plant is equipped to provide feed manufacturers custom premixes of any practical combination and potency of vitamins, medicaments or other feed additives, according to Dawe's.

Wilford Farmer

Wilford Farmer was named manager of the Atlanta plant. He was transferred from the firm's Peoria, Ill., plant where, for five years, he held supervisory positions in production control and plant operations.

In connection with the blending plant, there will be warehouse stocks of the company's full line of feed fortification products, including individual vitamins and premixes of Dawe's own formulation.

In announcing the Atlanta plant, D. B. Kinkaid, Dawe's sales manager, stated that the facilities are designed to give Southeast feed manufacturers faster, more personalized service on their fortification requirements.

W. J. Arnold — John L. Libby

Hubbard Milling Makes Personnel Changes

MANKATO, MINN.—W. J. Arnold, feed department production manager of Hubbard Milling Co., Mankato, has been given additional responsibilities at the plant with the title of general superintendent, it has been announced by Ogden P. Confer, president. At the same time Mr. Confer announced that he has named John L. Libby to assist Mr. Arnold as engineer.

Mr. Confer's appointment stated that Mr. Arnold will continue as feed production manager at Mankato, reporting to the manager of the feed department. Loading and warehousing will also be under his direction.

As general superintendent Mr. Arnold will report to the president as a division manager. He will be responsible for design, installation and maintenance of all properties of the company.

Mr. Arnold's milling experience extends to 1924 when he started work at the Wabasha (Minn.) Roller Mills. Seventeen years later he moved to Los Angeles as assistant superintendent of the V. O. Milling Co. He returned to Minneapolis as assistant superintendent of King Midas Flour Mills, Hastings, Minn., where he remained before becoming associated with Hubbard in October, 1945, as flour mill superintendent.

Later Mr. Arnold was named feed mill superintendent at Mankato and also supervised construction of the company's plants at Marion, Ind., and Cedar Rapids, Iowa.

Mr. Libby is a new employee of Hubbard. Prior to joining Hubbard he had 16 years of mechanical engineering experience in the feed and flour industry. He is a native of Fostoria, Ohio, and studied at Bowling Green University in Ohio. Later he studied milling technology at Kansas State University. He represents the fifth generation in the Libby family which has engaged in the milling industry.

Lanier Feed Mill Has Formal Opening

GAINESVILLE, GA.—The formal opening of Lanier Feed Mill, Inc., Gainesville, was held Aug. 7, according to Homer Wilson, president of Bruce & Wilson Co., and John Cromartie, president of Twin Oaks Hatchery.

The new mill is a joint venture of Bruce & Wilson Co. and Twin Oaks Hatchery. Officers of the feed mill are Max Ward, president; Homer Wilson, executive vice president and general manager; Mrs. Edna Wilson, secretary and Mrs. Bernice Bruce, treasurer. Members of the board are John Cromartie, Joe M. Tankersley and Alton Bruce.

Mr. Ward says the mill, which has been in operation for several months, is designed to produce at the rate of 100 tons of feed or more per eight hour shift. Facilities are arranged for both bulk and bag delivery.

Major emphasis will be on broiler, layer and breeder feeds, along with some hog rations, he says. Mr. Ward adds that the firm may also produce a complete line of additional livestock feeds.

Eastern States Co-op Adds New Facilities For Grading of Eggs

WEST SPRINGFIELD, MASS.—Adding facilities to provide more poultry farms with egg grading service at its branches is one of the first projects undertaken by the new egg marketing department of Eastern States Farmers' Exchange, West Springfield, according to Howard Whelan, manager of the cooperative's egg marketing operations.

Orders for two grading units have been placed, Mr. Whelan told the advisory committee for the Eastern States egg marketing department at its meeting July 31. The committee is composed of two members from each of the six branches which had previously been separate cooperatives until their mergers with Eastern States in April and June of this year.

Egg grading equipment is already in operation at the Derry, N.H., and Hamden, Conn., branches.

"More and more producers are finding it desirable to have their eggs graded at the plant rather than continuing this time-consuming chore on the farm," Mr. Whelan said.

The advisory committee also considered the proposed egg marketing agreements to be offered to qualified producers. The marketing of eggs under these agreements will be in operation some time in the early fall, Mr. Whelan said.

A report was made by Kenneth Hinshaw, director of information division, of the study that has been made for the development of a brand name which will be the focal point in a future marketing and promotional program for Eastern States eggs.

GMI (Sperry) Expands Feed Sales Force

SAN FRANCISCO — The Sperry (Western) division of General Mills, Inc., Minneapolis, has increased the scope of its southern California feed sales organization, and appointed F. A. (Dutch) Grutzmacher as assistant district sales manager as of Aug. 1. In this newly-created post he will aid E. R. Reynolds, sales manager, in administering integrated growing operations, as well as servicing an increased sales volume in the area.

Mr. Grutzmacher has managed the General Mills feed store in Hemet, Cal., since 1952 and has a total of 17 years of service in the company's feed sales activity. His successor as manager at the Hemet sales warehouse and bulk plant will be J. V. Kenley, who has been assistant manager at that location.

A. H. Roffers

A. H. Roffers Heads G.T.A. Feed Division

ST. PAUL—A. H. (Tony) Roffers, for 14 years head of the Northwest Co-op Mills in St. Paul, has been named manager of the feed division operations of the Farmers Union Grain Terminal Assn. He replaces James Mayhall, who has left the organization.

In his new job, Mr. Roffers will be in charge of the cooperative's feed manufacturing and distribution operations in Minnesota, North and South Dakota, Wyoming and Montana, as well as its farm chemical and seed operations. He will leave Northwest Co-op Mills as soon as a successor has been named to replace him, according to a G.T.A. report.

A native of Wisconsin, Mr. Roffers has some 25 years of experience with cooperatives, beginning as a manager of a local feed mill in Wisiconsin, and later engaged in general cooperative merchandising.

Ralston Purina Co. Announces Several Personnel Transfers

LOS ANGELES, CAL. — Several personnel transfers have been announced by Ralston Purina Co.

J. P. Andrews, manager of the firm's Los Angeles plant for the past 13 years, has been transferred to the company's international division at Mexico City, according to R. Hal Dean, vice president in charge of the international division. Mr. Andrews will be in charge of oil seed crushing operations and purchasing in Mexico. He joined Ralston Purina in 1946 when Purina purchased the Los Angeles plant from the Taylor Milling Co.

David L. Grant, Purina manufacturing vice president, has announced the following additional transfers in Purina branch plants:

H. F. Hall, Jr., manager at Visalia, Cal., transfers to Los Angeles as manager. He joined the company as a trainee at Fort Worth, Texas, in 1949. He also served at Amarillo and Spokane before being transferred to Visalia as manager in 1957.

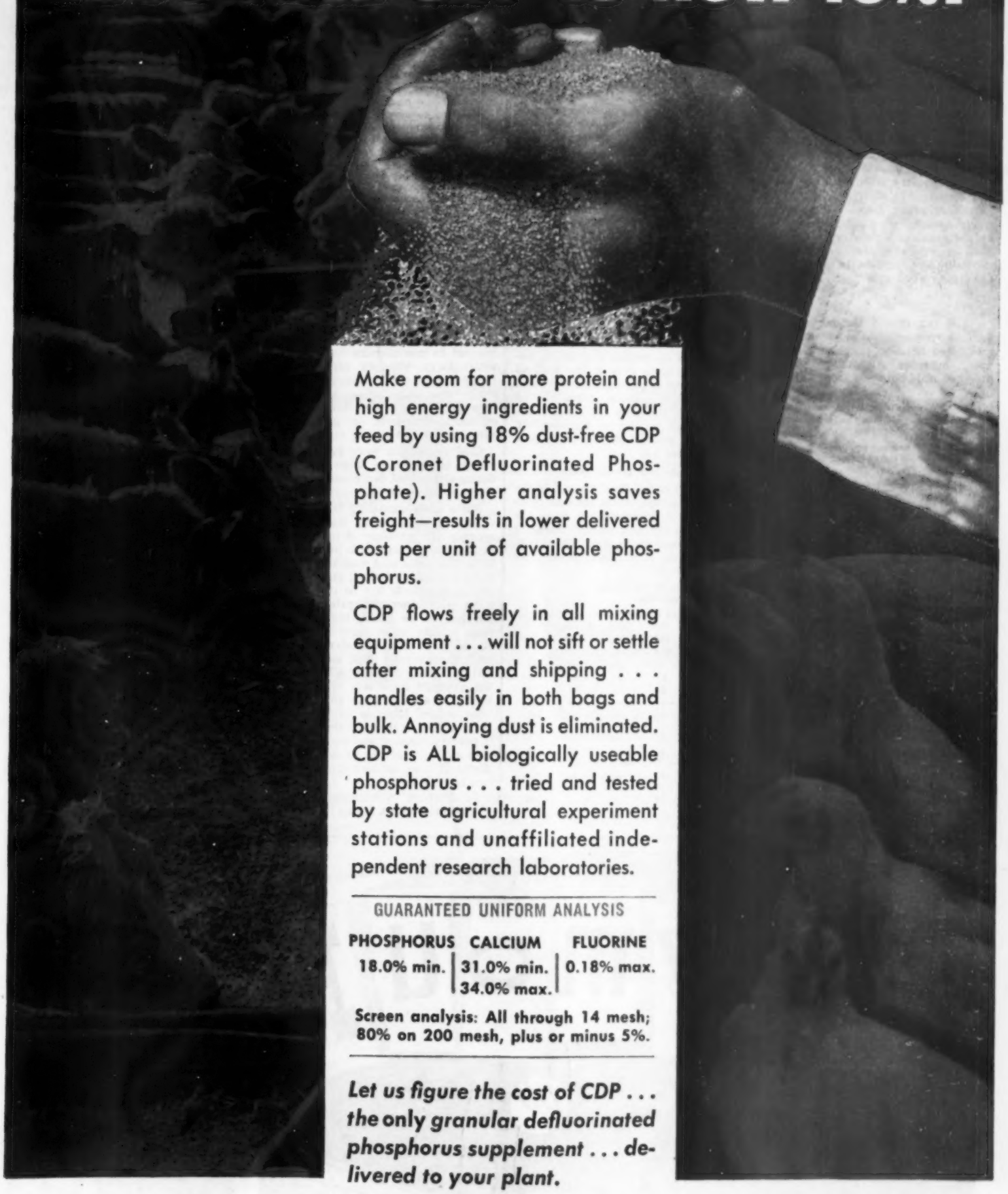
Alex Wainwright, office manager at Visalia becomes the Visalia plant manager. He started with Purina in 1947 as a stock clerk at Visalia. The following year he became plant accountant there and in 1954 he became office maanger.

Fred Raunikar, general foreman at Wichita, transfers to Visalia as superintendent. He started with Purina as a trainee at Nashville in 1956. Since then he has worked in the Purina plants at Oklahoma City and Wichita.

NEW FEED MILL

BANCROFT, IOWA — The new Welp Electronic Feed Mill is to be completed here within a few weeks,

DUST-FREE CDP IS NOW 18%P



Make room for more protein and high energy ingredients in your feed by using 18% dust-free CDP (Coronet Defluorinated Phosphate). Higher analysis saves freight—results in lower delivered cost per unit of available phosphorus.

CDP flows freely in all mixing equipment . . . will not sift or settle after mixing and shipping . . . handles easily in both bags and bulk. Annoying dust is eliminated. CDP is ALL biologically useable phosphorus . . . tried and tested by state agricultural experiment stations and unaffiliated independent research laboratories.

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How Does Laying Flock Size Affect Returns, Costs?

By Ludwig M. Eisgruber, Earl W. Kehrberg and Joe W. Sicer

Purdue University

EDITOR'S NOTE: This report on a survey of 47 laying flocks in northeastern Indiana is from an Economic and Marketing Information bulletin published by Purdue University, and was prepared by Dr. Ludwig M. Eisgruber and Dr. Earl W. Kehrberg, department of agricultural economics, and Prof. Joe W. Sicer, department of poultry science. They make this comment in their report: "Since costs excluding labor remain relatively constant as flock size increases, the problem of how large a laying flock is profitable hinges largely on the value and availability of labor for the laying flock enterprise."

"How big should the laying flock be?" is frequently asked by poultrymen, feed dealers, egg handlers and credit agencies. An analysis of detailed records obtained from 47 laying flocks in northeastern Indiana for the laying year of September 1957-August 1958 may aid you in answering this question.

The average price received per dozen eggs was about the same for flocks of all sizes. However, owners of large laying flocks (more than 500 birds) received an average egg price of about 37.2¢ doz. because of volume bonus and slightly better quality, while owners of small flocks took advantage of a market for hatching eggs and were thus able to get the same average price as large producers.

With a trend toward large hatcheries and contract pullet raising it is a serious question whether the small producers will be able to retain the hatching egg market. Hatcheries, like other egg buyers, may find it profitable to meet their large egg requirements by paying a quantity bonus and making only a few pick-up stops instead of paying a flat rate and making many pick-up stops. Should this become the case, the small poultryman will receive a considerably lower egg price than the large producer (Table 1).

TABLE 1—Average Egg Prices Received by Poultrymen, Northeastern Indiana, 1957-1958

Size of Flock (Number of Layers)	Average egg price received by All Flock Owners	Flock owners not Selling Hatching Eggs
	cents per dozen	
Under 250	37.3	34.5
250- 499	36.4	35.1
500- 749	36.8	36.8
750- 999	37.5	37.5
1000-1249	38.5	38.5
1250-1499	38.5	38.5

Costs per Dozen Data

When all costs—feed, chicks, interest, depreciation, miscellaneous costs and labor—were considered, costs per dozen eggs declined sharply as flock size increased up to about 800 birds. Beyond this size, cost advantages from increasing size were considerably smaller (Table 2). Although cost advantages per dozen eggs were small as flock size increased beyond 800 birds, they should not be neglected, since even small savings per dozen amount to considerable total savings when large volumes are involved. (The largest flock included in this study was only about 1,500 birds. Extrapolation of the data presented must, therefore, be carried out with caution.—Author's note.)

TABLE 2—Average Costs per Dozen Eggs Produced for Various Flock Sizes, Northeastern Indiana, 1957-1958

Cost Item	Size of Laying Flock: Under 250	250-499	500-749	750-999	1000-1500	Average 543	Average as % of total
	Dollars per Dozen						
Feed*	.18	.18	.20	.19	.18	.19	41
Flock depreciation	.07	.07	.06	.06	.07	.06	13
Miscellaneous	.01	.02	.02	.01	.01	.02	4
Total direct cost	.26	.27	.28	.26	.26	.27	58
Depreciation of housing and equipment	.02	.01	.02	.01	.01	.01	2
Interest (6%) on investment	.03	.01	.02	.01	.01	.02	4
Total fixed cost	.05	.02	.04	.02	.02	.03	6
Labor cost ($2/hr.)	.26	.19	.16	.10	.11	.16	36
Total cost	.57	.48	.48	.38	.39	.46	100

*On the average 68% of this is purchased feed.

Cost economies were basically the result of declining labor costs per dozen. Other cost decreases were relatively small as flock size increased.

Since costs excluding labor remain relatively constant as flock size increases, the problem of how large a laying flock is profitable hinges largely on the value and availability of labor for the laying flock enterprise. If the laying flock has to compete for labor with other enterprises or if labor has to be hired, then a laying flock should be at least as large as 800 birds. (This is considerably larger than the average flock size of about 500 birds in northeastern Indiana and the average flock size of about 200 birds for all Indiana.) But if otherwise unused labor is available on a farm at low or no cost, and especially if poultry housing and equipment are also available at low or no cost, then flocks of sizes smaller then 800 birds can be justified.

In 1957-58, northeastern Indiana poultrymen with a laying flock of fewer than about 600 birds received on the average less than $1 hour of labor spent on their flocks. Larger flocks returned about $2 hour of labor expended on them. None of the average flocks studied—regardless of how large they were—yielded returns to management after a charge of $2 hour of labor was made (Table 3, situation A), in spite of rather favorable egg prices during 1957-58.

TABLE 3—Average Costs and Returns of Various Laying Flock Sizes, Average and More Efficient Producers, Northeastern Indiana, 1957-1958

Situation	Laying Flock Size: Under 250	250 to 499	500 to 749	750 to 999	1000 to 1500	Average (543)
A. Average Producers:						
1. Price received per dozen ($)	.37	.36	.37	.38	.39	.37
Dozens produced per hen	17.5	17.7	17.3	18.1	16.5	17.6
Returns per layer ($)	6.53	6.44	6.37	6.79	6.34	6.55
2. Costs per dozen ($) (excluding labor)*	.31	.29	.32	.28	.28	.30
3. Returns to labor and management per dozen ($) (at $2 per hour)	.06	.07	.05	.10	.11	.07
4. Labor costs per dozen ($)	.26	.19	.16	.10	.11	.16
per hour ($)	.62	.93	.82	1.87	2.01	1.15
5. Returns to management per dozen ($)	—.20	—.12	—.11	0	0	—.08
B. Most Efficient Producers: (assuming commercial egg prices and a labor rate of $2/hr.)						
1. Price received per dozen ($)	.34	.35	.37	.38	.39	.37
Dozens produced per hen	18.3	20.0	18.5	19.6	18.0	18.6
Returns per layer ($)	6.22	7.00	6.85	7.45	7.02	6.88
2. Total cost per dozen (including labor)	.48	.42	.35	.33	.31	.38
3. Returns to management per dozen ($)	—.14	—.07	.02	.05	.08	—.01

*Includes cost of feed, flock depreciation, miscellaneous expenses, depreciation of housing and equipment, and interest on investment (cf. Table 2).

Costs of the more efficient flocks were about 7¢ doz. lower than the average costs for all flock sizes. This is a considerable difference and points out that a laying flock owner should be greatly concerned with the efficiency of his laying flock, no matter how large or small the flock.

Efficiently managed flocks of a size larger than 500 layers also yielded a return to management after covering all the costs including a charge of $2 hour of labor (Table 3, situation B).

Plans Being Made For Iowa Conference

AMES, IOWA—Final plans are being made for the second Iowa College-Feed Industry Conference, to be held in September at Iowa State College.

On Sept. 18, there will be a conference program designed especially for feed salesmen and dealers. Last year, this type of program attracted more than 500 persons, a record high, to the conference.

On the previous day, Sept. 17, there will be an afternoon session for feed company personnel at the management level, sales managers, advertising managers and nutritionists, plus editors of the agricultural and trade press and radio stations.

OHIO FIRM EXPANDS

MARIETTA, OHIO — The Apex Feed & Supply, Inc., Marietta, recently purchased the Beverly Milling Co. and opened a Beverly branch, according to Harry Cogswell, president of the firm. He said the new branch will enable the company to carry a more complete line of feeds, seeds, fertilizers, etc. The branch will be managed by Herman A. Huck.

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1. Whitehair, C. K.: Medicated Swine Feeds. North Am. Vet. (Am. J. of Vet. Sci.) 39 (No. 2) (Feb. 1958): 92.
2. McGinnis, J. et al.: Use-history of Antibiotics as Related to Their Efficacy in Promoting Growth of Turkeys. Poultry Science, In press.
3. Bird, H. R.: Coming Events in Poultry Nutrition. Hatchery & Feed, July, 1958.

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Hormone, Enzyme And Tranquilizer Work Reviewed

MUSKOKA, ONT. — Research on hormones, tranquilizers and enzymes was discussed recently by Dr. C. F. Chappel, technical specialist, agricultural division, Eli Lilly & Co., Indianapolis, at the Canadian Feed Manufacturers Assn. convention in Muskoka.

The following is part of his talk:

A summary of 23 experiments conducted by college agricultural experiment stations indicates that feeding diethylstilbestrol to fattening cattle increases rate of gain about 15% and improves feed efficiency about 11%. This research also indicates that feeding diethylstilbestrol to fattening cattle has no effect on yield, grade or quality of the meat produced. It has recently been estimated that approximately 75% of all cattle on feed in the U.S. and a large percent of those on feed in Canada are receiving diethylstilbestrol in their ration.

Dienestrol diacetate (Lipamone™), another synthetic compound with female sex hormone activity, is being added to poultry rations to improve carcass quality.

It has been demonstrated at the Missouri station and by others that feeding thyroprotein to dairy cows may stimulate milk production and is of benefit in maintaining milk production throughout the lactating period.

Research recently completed at the Iowa experiment station indicates that feeding thyroprotein to sows, starting at time of farrowing and continuing for approximately the first five weeks of lactation, may increase milk production and thereby increase the health and growth rate of baby pigs.

During the past year there has been a lot of interest in feeding Tapazole (Methiomazole, Lilly) to beef cattle being fattened for market. Tapazole is a synthetic compound that acts as a thyroid blocking agent. It is one of the most potent antithyroid substances known. Research from the Iowa and Arizona experiment stations has indicated that feeding Tapazole to fattening beef cattle stimulates gains in the early part of the feeding period and tends to improve carcass quality. Further research from the Iowa experiment station has indicated that Tapazole will stimulate gains in beef cattle when added to the ration during the last 30 days of the feeding period. However, information must be gathered on the effect of long term feeding, optimum dose levels, toxicity in cattle and other animals, and tissue residue levels along with practical field trial information before Tapazole can be considered for use by the feed industry.

A great deal of research is now in progress in which hormone and hormonal-like substances are being stud-

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ied from the standpoint of striving to improve many phases of meat, dairy and poultry production. It may some day be possible to stimulate growth of selected tissues and by so doing to improve the quality of the product produced. It should also be possible in the relatively near future, to control sex in poultry and farm animals as well as the conception date of swine, sheep and cattle which would be a great aid in improving the efficiency of producing meat, milk and eggs.

Recent research has indicated that adding tranquilizers to rations of growing chickens decreases mortality of the chickens when subjected to heat stress.

Research has also been conducted on the effect of tranquilizers on the growth of chickens raised under the usual environmental conditions. These findings have been variable and at the present time, there does not appear to be any advantage for their use in broiler and chick replacement rations.

Several experiments have also been conducted in which tranquilizers were used in the rations for laying hens. Again, the results have been variable and no recommendation can be made for the use of tranquilizers in the rations of laying hens at the present time.

Research completed to date has failed to demonstrate any value from adding tranquilizers to the rations of growing swine.

Researchers from one pharmaceutical company have found that hydroxyzine (Tran-Q) when fed to fattening beef cattle, stimulated gains and improved feed efficiency when included in a ration containing diethylstilbestrol and oxytetracycline.

Researchers at Washington, Oklahoma and Florida experiment stations have obtained similar results. However, researchers at the Arizona, Kentucky, Purdue, Iowa and Texas experiment stations obtained no benefits from adding hydroxyzine to the rations of beef cattle.

Enzymes

Enzymes that are currently being studied as potential feed additives are those that are active in digestion. For the most part those that are being considered are those that aid in the digestion of protein (proteolytic enzymes) and those that act on sugars and starches (amylolytic enzymes).

Workers at the Iowa experiment station stimulated new interest in enzymes for the feed industry when they demonstrated that baby pigs required additional pepsin (protein splitting enzyme) in order to digest a ration in which soybean protein was substituted for the protein of dried skim milk. Additional research at this station demonstrated that the baby pig is deficient in certain protein splitting enzymes.

Dr. Wood and associates at the university of British Columbia studied the composition of sow milk. A typical analysis showed sow's milk to contain on a dry basis, 40% fat, 24% lactose, 31.5% protein and 4.5% ash. These workers then studied the enzyme activity of the baby pig and concluded that: the baby pig has a high ability to digest lactose (milk sugar); a poor ability to digest starch.—This ability to digest starch is gradually improved as the pig gets older; enzymes responsible for digesting sucrose (table sugar) were absent in the baby pig; lipase, the enzyme necessary for digesting fat, was present.

Scientists at Washington State College discovered that water treatment of barley improved rate of gain and feed efficiency in growing poultry fed high barley rations. Similar results were obtained from adding either a bacterial or fungal enzyme mixture to a high barley ration. These researchers have further demonstrated that barley from different areas of the North American continent is affected to various degrees by the enzyme mixtures.

At the last Iowa State College Cattle Feeder's Day, Dr. Burroughs and associates reported on results obtained from feeding an enzyme mixture to beef cattle. The addition of this enzyme mixture to rations for fattening cattle stimulated gains and improved feed efficiency. However, when this enzyme mixture was added to rations containing high moisture corn (19-30%) in place of corn of usual moisture content (10-14%), there was no improvement in performance of cattle due to the addition of the enzyme mixture.

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HAZEN, N.D. — Harold's Feed Service, a new feed formulating business in Hazen, had an open house at their headquarters recently.

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Washington Co-op Ups Barley Returns With Hog Program

Paul DeVore, information agent, Farm Credit Banks of Spokane, Wash., reports in a recent issue of News for Farmer Cooperatives published by the U.S. Department of Agriculture, that a group of eastern Washington wheat growers has increased their returns on barley by cooperatively marketing the grain in "pig skins."

The Edwall (Wash.) Livestock Cooperative was organized by farmers in the Edwall area because they consider barley a permanent part of their grain production program and because eastern Washington is a deficit hog production area.

The new cooperative, with a hog production and marketing program designed to convert barley into pork, has boosted members' returns on this feed grain more than $14 ton, or approximately 40% above the loan price level fixed by the government.

At the end of the co-op's first year of operation, Oct. 31, 1958, the barley-pork program showed a net margin of $22,450. This gave the farmer-owner a $4 ton cash bonus over and above the loan value—$33.50 for 1957 pooled barley and $33.70 for the 1958 pool—plus a credit of $10.70 ton in their co-op equity accounts.

Co-op members earned the net return of $49.75 ton on barley, despite the fact that they marketed hogs during only about half of the first year of operation. However, they admit they were favored by a rather strong hog market during most of their initial marketing period. Even so, members feel confident that with the experience gained the first year and with a little more operating efficiency they can continue to market their barley profitably through hogs even if the hog market drops below the first year's average of $23.15.

The co-op's marketing agreement provides that a member deliver his quota of barley each year for five years. In the event the member is unable to deliver this quota of barley, he may, on a market price basis, substitute other grain or livestock feed.

Mr. DeVore writes in News for Farmer Cooperatives that if a member fails to deliver either barley or an acceptable substitute feed, the cooperative may purchase the grain on the market and charge the member's individual account for any loss sustained by reason of such non-delivery.

"In short, for a period of five years the farmer-owners are underwriting the basic feed supply for the venture," Mr. DeVore writes.

Payment for this feed grain is based on pool returns from hogs marketed.

A member's pool quota is determined by his investment in association stock. Each share of common stock has a par value of $75—the amount of capital investment the organizers figured it would take annually to market a ton of barley through hogs. Each member is required to hold not less than one share of common stock and no member can hold more than 10% of the common stock issued. At the time the co-op was incorporated in February, 1958, 30 members had invested more than $30,000 in stock.

The new cooperative finished its first year with assets in excess of $78,000—more than $40,000 of this in buildings and equipment. The plant, on 28 acres of leased ground near Edwall, consists of 23 individual sheds and feeding pens, all on cement and each equipped with self-feeders and automatic waterers.

Vermont Conference Program Announced

BURLINGTON, VT.—Various aspects of poultry and dairy feeding will be discussed in talks at the 17th annual meeting of the Vermont Feed Dealers & Manufacturers Assn. to be held here Sept. 23. The convention site will be Fleming Museum Auditorium on the campus of the University of Vermont and State Agricultural College.

Following registration at 10 a.m., Dr. John T. Fey, president, University of Vermont, will welcome the convention group.

First talk on the program will be "Our Progress in Research" by Dr. T. W. Dowe, director, Vermont Agricultural Experiment Station, and acting chairman, animal and dairy husbandry department, University of Vermont.

Lawrence E. Carpenter, executive director, Distillers Research Council, Cincinnati, Ohio, will discuss "Corn Distillers Products in Our Modern Rations."

The afternoon program will begin with a discussion of "Are Our Present High Energy Poultry Rations Responsible for Poultry Troubles?" by Prof. D. C. Henderson, chairman, poultry department, and R. T. Smith, assistant poultryman, University of Vermont.

A session of questions and discussions will follow their presentation.

Prof. A. M. Smith, department of animal and dairy husbandry, will talk on "Relationship Between Minerals and Roughage in Dairy Rations."

The convention's business meeting is scheduled to begin at 3:30 Sept. 23, with a banquet and entertainment following.

H. G. Savage, Bennington, association president, will preside over the afternoon program, and Glenn Mix, Montpelier, vice president, will preside over the morning program.

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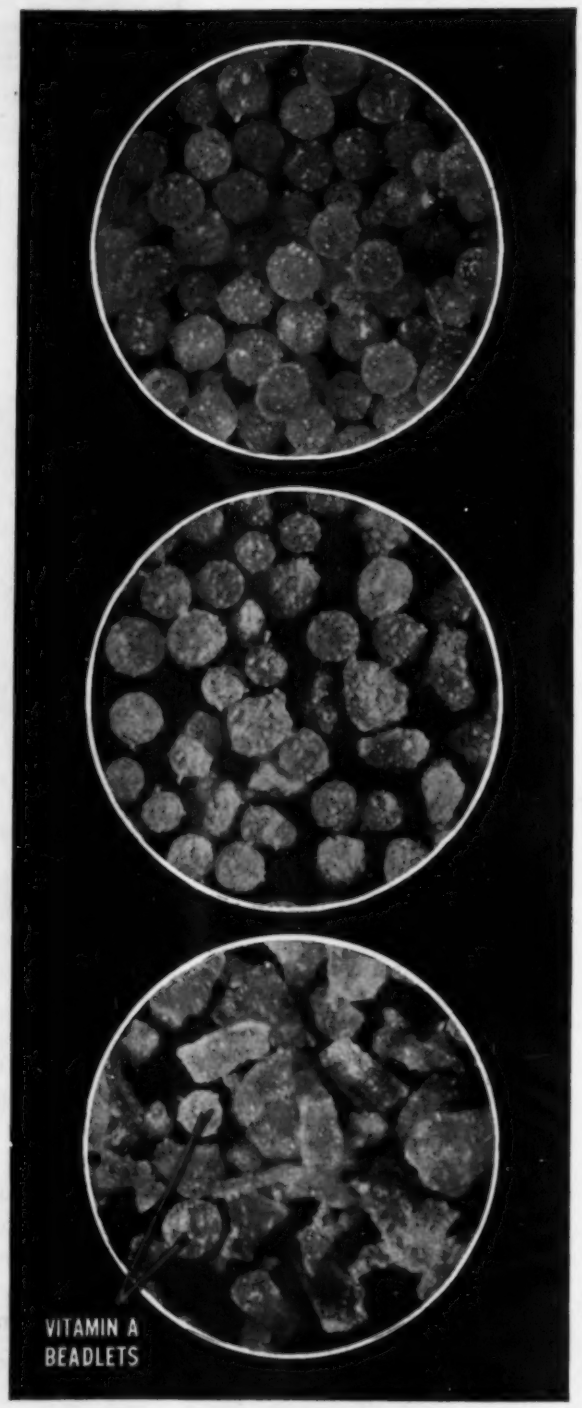

THREE PHOTOMICROGRAPHS OF VITAMIN A PRODUCTS

Top: Micratized Vitamin A, Nopcay® Type III. Spherical beadlets are A-active particles. Note that *all* particles in this product are A-active.

Center: Micratized Vitamin A, Nopcay Type V. Note that almost all particles are A-active. Occasional non-spherical particles are diluent, and included to assure free-flowing properties of product.

Bottom: A typical competitive product. Only two spherical A-active beadlets surrounded by non-active filler.

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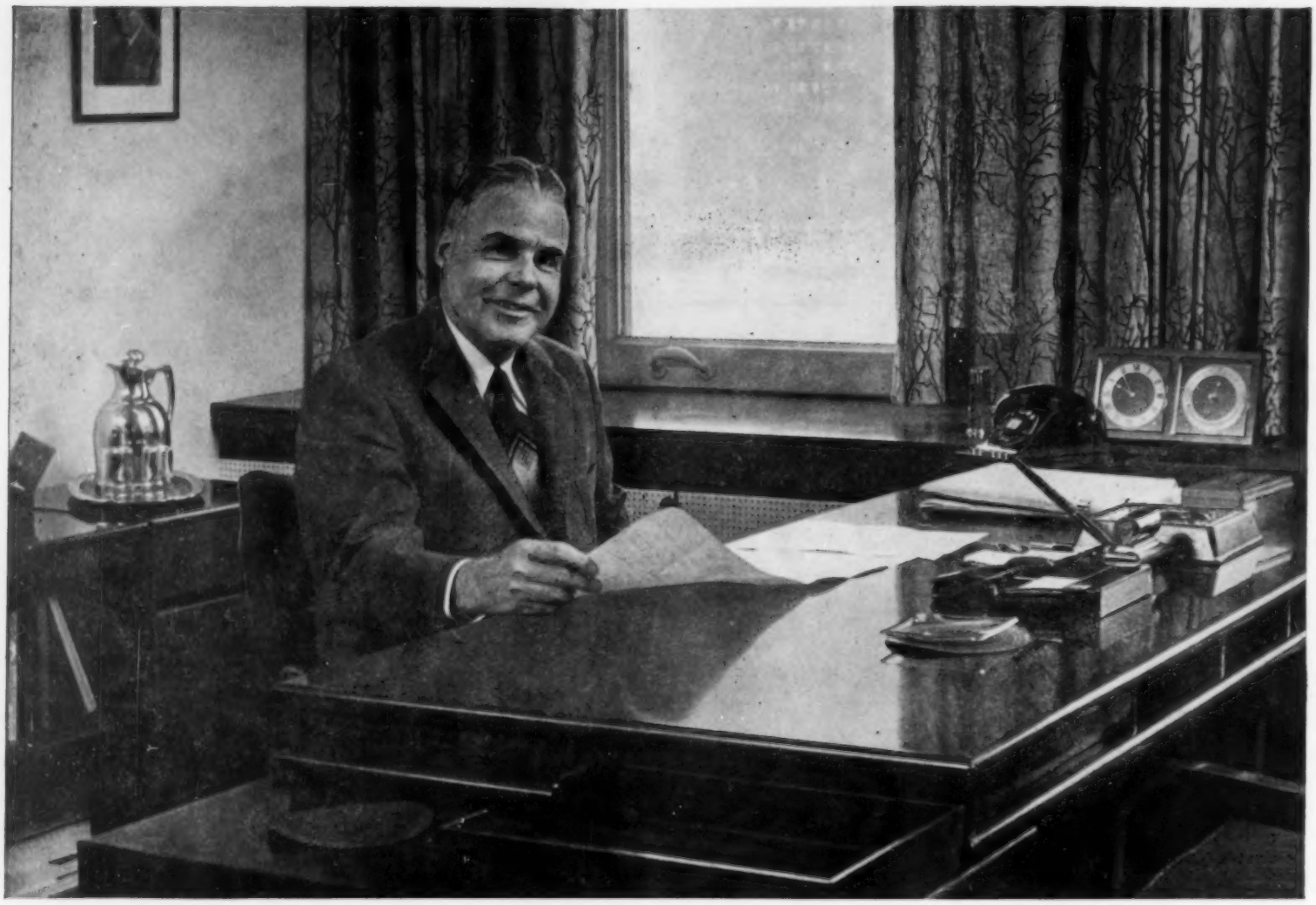

COLIN S. GORDON joined The Quaker Oats Company in 1927 in Akron. Coming up through the ranks of the Grain Division, he was named Executive Vice President in 1952. "Chi" served in Washington as Director of Food Division of OPA in 1944, and is a leader in several farm and civic organizations.

"I join the other officers of The Quaker Oats Company in praise of the fine team effort on Ful-O-Pep Feeds this year. You have proved you can profit from Quaker's aggressive program to seize today's big new opportunities in the feed business.

"As we've told you, feed is important to us. And we have plans to continue to expand in this fast growing business. It is already a three and a half billion dollar industry, and we foresee sales increasing over 50% by 1970.

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"More plans are developing to make our feed business an even greater part of The Quaker Oats Company. Present dealers and new dealers, who have the same aggressive spirit, have more and more opportunity to benefit from Quaker's expanding program."

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CHINATOWN EGG FRY—It was hot enough to fry an egg on a busy street corner recently in San Francisco's Chinatown. Mai Tai Sing gets ready to turn an egg over easy, as restaurateur Ernest Tsang, of Chinatown's Cathay House, looks on. The stunt launched an attack by Chinatown restaurants on the egg surplus currently plaguing California's egg industry. Cooperating are the U.S. Department of Agriculture and the Poultry & Egg National Board.

Chinese Restaurants Attack Egg Surplus

SAN FRANCISCO, CAL. — More than 100 Chinese restaurants in San Francisco's Chinatown began an attack on the egg surplus to popularize egg dishes, increase consumption and aid California's ailing egg industry recently.

Restaurant operators throughout the area are now displaying menu clip-ons that invite patrons to try such dishes as egg-flower soup, egg rolls, peas with eggs, and prawns fried in egg batter. Many individual establishments also are featuring numerous variations as specialties of the house.

J&O Grain Conducts Seaway Conference

DULUTH—The growing importance of Duluth as an export point for grains from Upper Midwest farms was discussed here recently during a business conference conducted by J & O Grain Co., Minneapolis.

Attending the conference were 32 J & O officers, floor men, branch managers and field representatives from company offices at Minneapolis; Chicago; Sioux City, Cedar Rapids and Algona, Iowa; Fargo and Grand Forks, N.D., and St. James and Montevideo, Minn.

W. C. Olson, J & O president, said the conference was held at Duluth so company officials could view the port and get a better idea of how the Seaway is expected to influence export grain traffic.

Michigan Chemical Opens Florida Plant

ST. LOUIS, MICH.—The Michigan Chemical Corp. has started production at its new magnesium oxide plant at Port St. Joe, Fla., according to Fred A. DeMaestri, vice president of operations for the firm. After the essential in-process build-up, finished products will reach customers early in October.

Augmenting extensively its Michigan magnesia operation which will continue to produce caustic magnesia and specialties, the new plant will provide industry with high-purity chemical and refractory grades of magnesium oxide.

The new plant will enable Michigan Chemical Corporation to serve industry over a wide area with rail, ocean and Mississippi barge shipping facilities, officials said.

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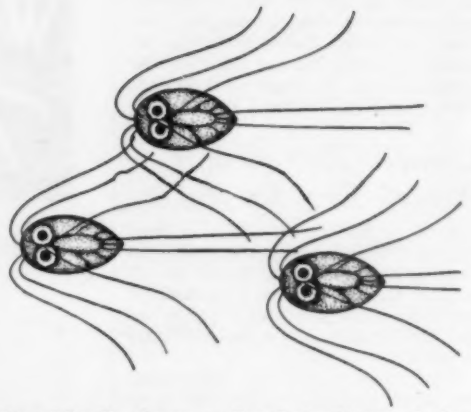
HEXAMITIASIS



Hexamitiasis is characterized as an acute or rapidly developing and fast spreading contagious disease causing inflammation of the intestine (catarrhal enteritis) in turkeys and several species of semidomesticated birds.

This disease first was described in the United States in 1938 (1). It had probably existed for some time prior to this, however, having been designated as trichomoniasis. This was a rather natural mistake since the protozoan parasite called **Trichomonas,** is abundantly present in the intestine of many normal as well as sick birds and is easily observed under the microscope. The parasite causing hexamitiasis, on the other hand, is observed with considerable difficulty even with the aid of a high powered microscope. The name **Hexamita,** for the causative parasite, was adopted from Wenyon (2) who suggested this generic desigation rather than **Octomitus** apparently employed previously by some other scientists for the same parasite. At about the time of its first appearance in this country, under its present name, the disease increased in prevalence on some turkey ranches. Experimental work seeking to determine the cause for the trouble soon incriminated the protozoan parasite, **Hexamita meleagridis,** as the etiological agent (1). Pathogenic bacteria could not be isolated from affected birds, and the nature of the ailment failed to suggest a virus as the cause.

Hexamitiasis in pigeons had been reported some time previously (1923) in Germany (3). It is interesting to note that an organism designated as **Hexamitus** was reported in the blood of frogs and tortoises (4). The investigator believed hibernation to be favorable for passage of the parasites through the intestinal wall. A similar organism was described in 1924 (5). No evidence was presented to show that the **Hexamitus** found in frogs and tortoises is infectious for birds.

This ailment has now been reported from many sections of the United States and from several other countries. The disease has a tendency to appear in certain areas and cause trouble for a time and then subside only to reappear at a later date. Available records would seem to indicate the malady has not been as prevalent during recent years in this country as it was a decade or more ago.

Trouble begins wherever it strikes . . .

Statistical data on the extent of present-day losses to the poultry industry from hexamitiasis are not available. Some concept of the extent of possible trouble that might follow an outbreak of the disease may be gained from the record of certain previous outbreaks. In California's Los Angeles County an annual loss was estimated to be from $75,000 to $100,000 at the time when the ailment first was reported (1). Approximately 20,000 turkeys died in Indiana from the outbreak of 1944 and 12,000 succumbed the following year. Losses seldom amounted to less than 50 per cent of the flock. In the ensuing year, no outbreaks were reported (6). In Connecticut in 1943, there was a death loss from hexamitiasis in turkeys of 240 in one flock of 475 birds and 75 per cent of another flock numbering 850 birds became affected with an eventual death loss of 300 (7). California in 1942 reported that 1,550 ringed-neck pheasants died in a flock of 2,250 (8). Similar losses have been suffered from time to time in other sections of this country as well as in foreign lands.

The incidence of hexamitiasis has been sporadic rather than epizootic. This disease is one that has appeared in many sections of the country at certain times rather than an ailment that has devastated the same areas regularly or one that has become generalized over the land. When encountered, however, hexamitiasis more frequently than not causes serious trouble to the flock owner.

A microscopic parasite causes this disease . . .

Hexamitiasis is caused by the protozoan parasite, **Hexamita meleagridis.** This organism (pp.2) is considerably larger and more highly organized than the bacteria, but is much smaller than the metazoan parasites such as worms. In many respects it resembles **Giardia.** The body of **H. meleagridis** is oval shaped. It varies in length from six to 12 microns with an average of nine microns (a little less than 1/3000 of an inch). In width the parasite varies from two to five microns with an average of three microns (9). The species, **H. columbae,** causing hemamitiasis of pigeons, is somewhat smaller (10). A distinct nuclear membrane is present, and the karyosomes are round, fairly large and about two-thirds the diameter of the nucleus.

Anterior to the nucleus are two rows of blepharoplasts with two in each row. From the anterior blepharoplasts, arise four anterior and two anterolateral flagella or whip-like appendages. The anterior flagella usually are curved back along the body and all are about the same length. The two posterior blepharoplasts give rise to two caudally directed flagella which pass backward in a granular line of cytoplasm to the pockets where they emerge from the body wall. Caudal flagella pass out of the body either at the extreme posterior part or slightly anterior to this point. They are considered to be relatively strong since they frequently attach to pieces of tissue and swing back and forth like a pendulum when observed in cover-glass preparations with a microscope. Caudal flagella are two to three times the length of the body. The parasite is reported to have a resilient pellicle which does not rupture easily. **H. meleagridis** moves with a rapid darting motion when observed under the microscope. Individual organisms undergoing binary fission have been reported to be abundant in specimens taken from the small intestine. Multiple fission has been described in some instances (11).

The cultivation of an etiological agent outside the body of susceptible birds and free from associated organisms such as bacteria and other intestinal protozoa constitutes an important step in experimental procedure. It has been found that suspensions of **Hexamita meleagridis** inoculated into the chorio-allantoic cavity of embryonating chicken eggs could be propagated in a bacteria-free state when 10 mg. of streptomycin and 10 units of bacitracin were placed simultaneously in the chorio-allantoic cavity (12). Eight- to 12-day-old embryonated chicken eggs were found satisfactory and the bacteria-free culture of the protozoan was serially passed at 7-day intervals. The embryo was apparently not harmed by the presence of the parasite and those permitted to hatch appeared normal in every way. The parasite was found in the gut of embryos that had pipped the shell and in the intestine of chicks during the first 10 days after hatching. They were not found, however, in the intestine of embryos that had not pipped the shell. This evidence was considered to indicate the **Hexamita** did not migrate through the allantoic stalk to the gut, but were ingested when allantoic membranes were broken in the pipping process.

Symptoms alone are not enough for diagnosis . . .

Birds affected with hexamitiasis do not exhibit symptoms that serve to distinguish it from other ailments. In peracute cases, death may ensue before symptoms are noted. In less rapidly developing forms of the ailment, affected turkeys are listless, stand with drooping wings and often walk with a stilted gait. Foamy droppings often are in evidence. Sick birds may continue to eat for a time when rapidly becoming emaciated. This indicates interference on the part of the causative parasite with digestion and assimilation of food. Symptoms appear in three to five days after experimental infection. The period during which symptoms are observed varies from one to six days. The peak of mortality occurs after seven to 10 days, but straggling losses may extend for three weeks and a second peak of mortality is sometimes seen. The mortality rate in turkeys is reported to vary from 20 to 90 per cent. Heaviest losses occur in turkeys three to five months of age, but on some occasions the disease attacks poults one to nine weeks of age. Indeed, some investigators have reported the ailment in poults soon after hatching (13). Detrimental effects from the disease are threefold, being divided between the death loss, birds that are stunted and fail to develop properly after passing through an attack, and normal carriers that continue to harbor **Hexamita** in the digestive tract for many weeks or months and contaminate their environment by parasites voided in excreta (1).

The gross pathological changes to be observed in the carcass of birds affected with hexamitiasis vary to some extent with the age of the bird and the severity of the attack. In young birds which succumb quickly to the ravages of this ailment, the body may be in comparatively good flesh at the time of death and pathological changes visible to the naked eye are less pronounced.

In partly grown turkeys, the carcasses invariably are in poor flesh at the time of death. The skin is dry and the flesh dehydrated as a rule. Muscles over the breast region often are

congested. Lungs are normal but the liver and sometimes the kidneys are congested. In a small percentage of cases, edema of the tissues has been reported. The principal pathological change is to be found in the small intestine. Catarrhal inflammation is present in the duodenum, jejunum and ilium with lack of tone and local bulbous areas. The contents of the intestine may consist of a thick mucus or may be thin, watery and foamy. Foamy intestinal contents are rather characteristic. Fecal matter in the ceca is usually normal, but congestion of glandular tissue in the region of the ilio-cecal valve may be in evidence.

In pigeons, the intestinal tract is inflamed throughout, but a heavy mucus deposit is present in the rectum as well as the ilium. Such changes are particularly apt to be noted in young squabs (10).

The microscopic pathology shows a sloughing of the epithelium with an increase of mononuclear elements in the regional subepithelial tissue. In some areas, tips of the intestinal villi show slight loosening. The ilium has been reported to exhibit dilated glands with flattened epithelium which sometimes assumes a cyst-like character and encloses a few small oval bodies suggestive of protozoan organisms. Tissue invasion by the parasite could not be demonstrated, however, with certainty (7).

Hexamita are abundantly present in the exudate and intestinal lining of affected birds. The parasites are to be found in the cecal tonsils and bursa of **Fabricius** of parasite carriers.

Studies on metabolism have been conducted as a means of demonstrating the manner in which the parasite damages the host (14). Investigational work showed that hypoglycemia exists in hexamitiasis. Manganese chloride and dextrose were added to the drinking water of affected birds. Sick birds treated in this way regained normal blood-sugar and showed normal weight gains. In addition to hypoglycemia, it was determined that there is low urea and high creatinine level in the blood indicating that food eaten is not utilized, thus forcing the rapid emaciation in hexamitiasis.

Carrier birds spread the disease . . .

A considerable amount of experimental work has been directed to a study of the manner in which this ailment is maintained on the premises and spread to unaffected birds. It has been determined that some birds surviving an outbreak may nevertheless continue to harbor **Hexamita** in the intestinal tract and void the parasites in their excreta (15). Healthy birds contract the disease when they ingest food or drink contaminated with excreta of carriers. In one investigation, 16.5 per cent of 79 turkey-breeders one year of age or older and taken from five ranches where the disease had existed previously, were found by examination of rectal swabs to be carriers of **Hexamita.** The sexes were about equally distributed among the carriers identified. The apparent incidence of carriers was about doubled (32.4 per cent) in 74 adult turkeys examined by autopsy. In such cases, the causative parasites were found to be present in the cecal tonsils located two to four millimeters from the rectal opening of the cecal pouches. In the same investigation, **Hexamita** could not be found in chickens when 29 were examined from three ranches where outbreaks had occurred. Quail, Chuckar partridges and pheasants were likewise found to be carriers. Pigeons are known to be carriers of **H. columbae,** a species of **Hexamita** not transmissible to turkeys.

In later investigations, however, it was found possible to transmit **H. meleagridis** to young chicks (16). The extent of infection in such chicks was light as compared with the disease in turkeys. It was not possible to produce symptoms of catarrhal enteritis in inoculated chicks. The rectal method of inoculation proved most effective in transmitting infection. Normal chicks placed in a brooder with affected turkeys also contracted the disease. **Hexamita meleagridis** survived in the bursa of **Fabricus** and cecal tonsils for at least 22 weeks in chicks inoculated under one week of age, showing that chickens must be considered as potential carriers of the disease.

A laboratory diagnosis is necessary . . .

Symptoms of a fast spreading disease in partly grown birds that causes rapid loss of flesh and produces foamy droppings suggest the possible presence of hexamitiasis. The disease can be diagnosed with certainty, however, only in the laboratory after the examination of scrapings from the intestinal lining under a high-powered microscope.

In preparing intestinal scrapings for microscopic examination, it is essential that a small amount of mucus and tissue can be diluted with warm physiological saline solution. A drop or two of the suspension is placed on a glass slide and a cover glass applied. The resulting preparation should be only slightly turbid to the naked eye. **Hexamita** may be overlooked easily if the cover-glass preparation is too heavy. **Hexamita** exhibit a rapid darting motion which moves them across the microscope field with almost jet-like propulsion. The parasites are motionless in carcasses that have been dead for some time and are cold. It is sometimes advisable to warm the cover-glass preparation or immerse a section of the intestine in warm water for 10 to 15 minutes before removing material for examination. When it is desired to study the morphology of the organism, its rapid motion can be slowed by application of suitable chemicals or the structure of the parasite can be studied in fixed preparations after staining with suitable dyes. In addition to the examination of material from the small intestine, it is important to bear in mind that parasites may be abundantly present in cecal tonsils or the bursa of **Fabricius.** This is particularly true in birds that show evidence of recovery from the disease.

Hexamita often are found associated in the intestine with other protozoa such as **Trichomonas,** amoeba and **Chilomastix.** Trichomonads exhibit less rapid and jerky motions and are equipped with an undulating membrane. **Chilomastix** are provided with flagella and progress across the microscope field with a slow, dirigible-like motion. Amoeba, of course, move only by the extension of pseudopoda, and the small species found in poultry are sluggish.

Some drugs that appear effective . . .

Furazolidone has been reported to be effective in reducing mortality from hexamitiasis artificially induced by inoculation of turkey poults two weeks of age (17). Inoculum consisted of saline suspension of active **Hexamita** obtained from the intestinal tract of a bird with a heavy infestation of the parasites. Inoculation was both by mouth and by vent. Treatment was carried out by the administration of 50 mg. of furazolidone per pound of feed. Symptoms of the disease appeared four to seven days after inoculation and the peak of mortality occurred 11 to 13 days after exposure. The death loss in experimental birds not treated with the drug amounted to 66.6 per cent. Mortality in experimental birds treated two days prior to inoculation or simultaneously with inoculation amounted to 10 to 11.1 percent, respectively. These findings were confirmed by a second experiment, giving similar results. In treated groups, fewer organisms were found in the intestinal contents than in untreated birds.

Favorable results also have been obtained by the use of a three per cent mixture of fried whey in a one to 2,000 aqueous solution of copper sulfate. This mixture is given in the place of drinking water and must be kept fresh (18). Encouraging results were obtained from the administration of oxytetracycline (25 mg. per poult), chlortetracycline (200 mg. per pound of mash) and penicillin-G (25 mg. per poult) (19).

As far as can be learned at the present time, prophylactic treatment has not been developed. It seems entirely possible that prophylactic doses of drugs known to have therapeutic value might be employed if necessary.

Sanitation needed in prevention-control . . .

Since contamination of environment by healthy carriers of the protozoan parasite, **Hexamita,** is known to be an important factor in dissemination of the disease, good sanitation is essential to prevention and control.

When an outbreak of the disease has occurred, it is advisable to dispose of adult stock insofar as practicable since some birds surviving an outbreak can be expected to carry the causative organism and spread disease. In the event breeding stock of irreplaceable value must be kept, the flock should be segregated as completely as possible from young birds propagated on the premises. In the case of the large enterprise with extended facilities, it is well to raise young stock on one premise and maintain breeding stock on another.

In large flocks requiring several caretakers, it is advisable for one caretaker to administer to the young birds and another to the adult stock. In small flocks where one person must care for all birds, a good precaution is to go to the young birds first and provide separate boots and coveralls. The hands should be thoroughly washed in a mild disinfectant before and after entering the pen.

Wire platforms for feed and water containers are a valuable aid to good sanitation, but are of little benefit unless cleaned daily with a stiff brush. Feed and water containers should be of the type that are not easily contaminated with the excreta or feed of the birds.

When possible it is well to provide small quantities of feed that can be consumed in a day or two and to wash both feed and water containers frequently with a disinfecting solution, being careful subsequently to rinse with clean water.

Cement yards and wire platforms are an aid to the control of the disease when kept clean. Cement platforms should be covered with a small amount of suitable litter and wire platforms cleaned frequently. When disease threatens, a system of change of litter ought to be substituted for built-up litter and under no circumstances should young turkeys be started on litter previously used. In the case of birds ranging on the ground, the flocks should be moved sufficiently often to maintain unbroken sod, and keep down dust. Contaminated dust blowing into feed and water containers is one of the ways in which disease is spread on the range. A well drained range is desirable in order to avoid puddles of water and sump holes. Ranges frequented with Chuckar partridges, quail and pheasants are to be avoided.

Sick birds must be removed from the flock as soon as detected. When trouble appears to be mounting, several birds showing typical symptoms should be taken to the nearest laboratory for examination. For the diagnosis of hexamitiasis, it is essential that birds be delivered to the laboratory while still alive.

It is well to isolate the new stock brought to the premises and keep such birds under observation for a week or two before being added to the home flock. When purchasing new stock, careful inquiry should be made regarding the history of previous disease on the premises.

For additional copies of this article, write to Chas. Pfizer & Co., Inc., AGRAData, Agricultural Research & Development Department, Terre Haute, Ind.

Work of these men are cited . . .

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JOE BROOKS

BY AL P. NELSON

Welcome That New Farmer

Elderly Pop Henley who had worked for Joe for many years on a part-time basis, came into Joe's office late one summer afternoon. There was a slip of paper in his right hand.

"Hi, Joe," he said, "Got a minute to spare?"

"Sure," Joe said. "Sit down."

Joe liked Pop Henley, because the former mayonnaise salesman was a hard working loyal employee, who could do many jobs around the feed mill and store. He was excellent for filling small seed and garden and lawn supply orders. He could also sell livestock and poultry remedies and poultry and barn equipment better than anyone else in the organization. Trained in proper sales presentation, the retired mayonnaise salesman could explain a product in a patient, clear and fascinating way which had many a farmer reaching for his pocketbook before Pop was through with his sales talk. And Pop was also wise enough to stop talking when he saw a farmer itch to open the pocketbook. At such a point Pop knew the sale was made—and why go on any further?

Pop got along with everyone very well, but his usually calm temperament was always riled when Milt Peters began talking about his redheads during working hours. But as Pop philosophically said, "There is no job in the world that doesn't have a clinker or two in it." Milt was one of Pop's clinkers, and he had a hard time living with this fact.

"Joe," said Pop, after he had eased into a chair. "Did you know that a new family moved onto the old Smalley farm on route 4?"

"Why, no," Joe said in surprise, "I didn't. Who are they and how long have they been there?"

Pop chuckled. "The family's name is Gensman. Elmer Gensman, wife, son, age 15, and a daughter, 12. They have been there five days now."

Joe frowned a little. "Windy Kramer, our route man, should have gotten that information, but we never sold Smalley. He traded over at Brighton, for one reason or another. Windy calls on those hard to get customers only once a month hoping to get a break-in order. Oh, he did sell them some poultry equipment once, I believe. How did you find out about the new family, Pop?"

Pop Henley's blue eyes twinkled. "Well, I eat breakfast at Happy's every mornin' you know. Usually, there are one or two or more farmers in there. I get talkin' to 'em. Ask them who they are and where they live. Then they ask me who I am. I tell 'em. I advertise that I work for Joe Brooks, the feed man. Good extra advertising, eh, Joe?"

The brown-haired feed dealer smiled. "It sure is. Thanks, Pop. That's extra-curricular activity, which is okay with me."

Pop Has an Idea

"I always ask those farmers if they know of any new farmers moving in and out of the area," Pop said. "This mornin' one of the farmers told me about the Gensman family, and I got an idea, Joe. Bing—just like that."

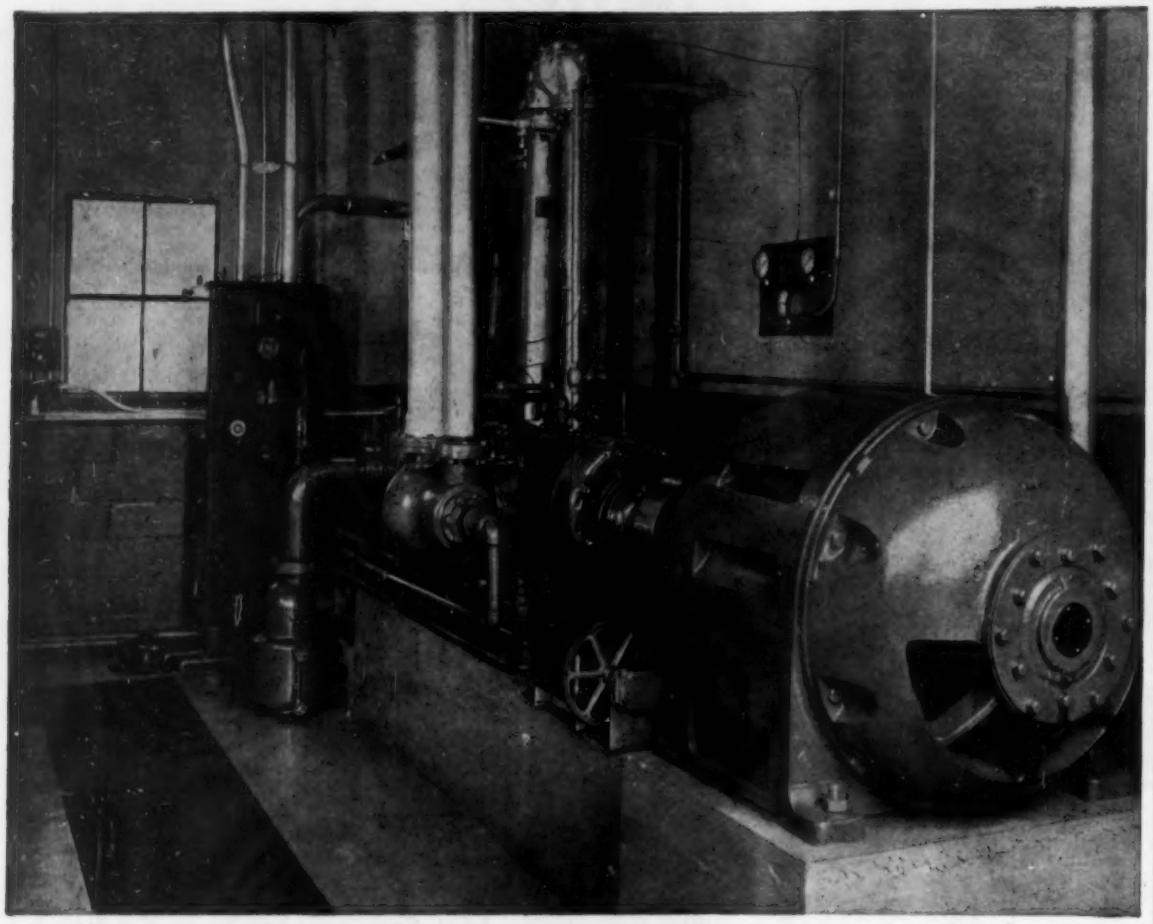
"You did? What is that idea?"

Pop chuckled. "Actually, it's so darn simple, Joe, I don't see why I didn't think of it before. Or you, or somebody else in this alert sales organization."

"Well, you are getting me interested."

"Joe, why can't we advertise that we will give $1 in trade to the first farmer who writes or phones us about a new family moving to a farm in our trade territory? That way, we won't be six days behind in learning about some of these transfers."

Joe's grey eyes lighted with interest. "Say, Pop, that is a dandy idea. Of course we do hear about a lot of



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C-230
3662

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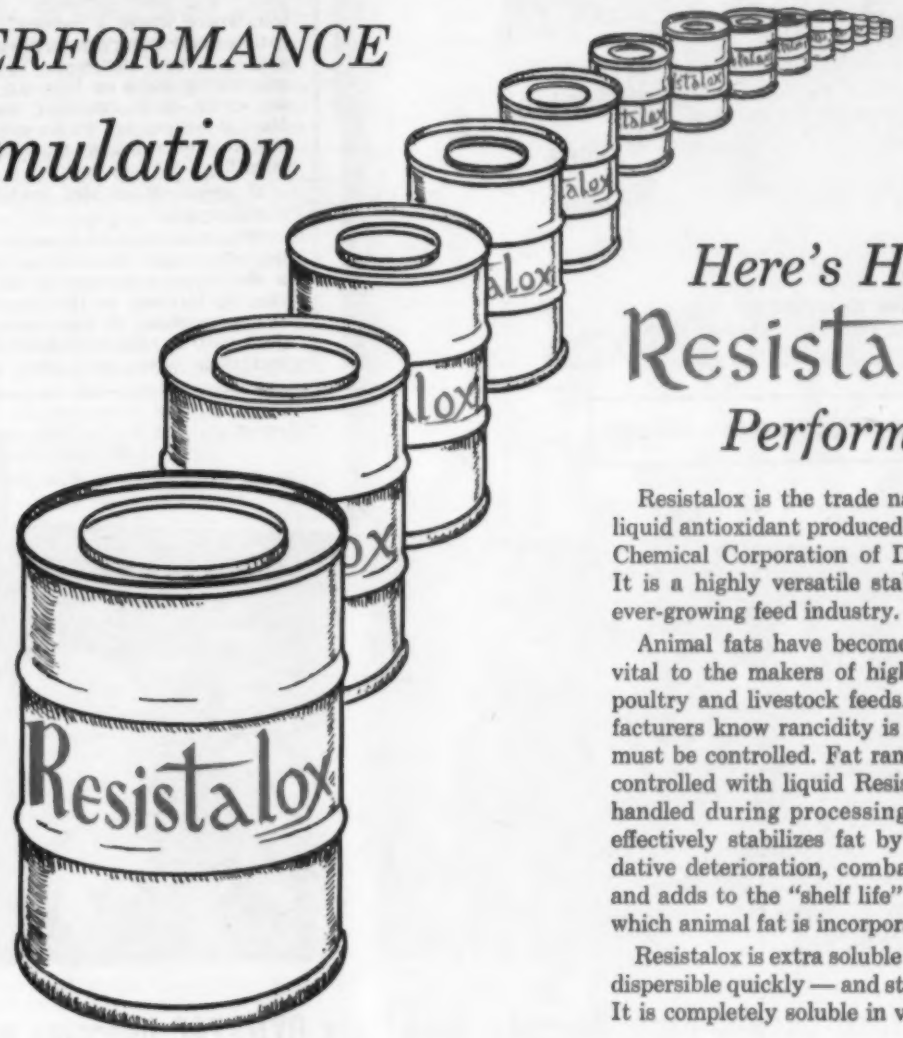

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Resistalox is the trade name of a new liquid antioxidant produced by the Casco Chemical Corporation of Dallas, Texas. It is a highly versatile stabilizer for an ever-growing feed industry.

Animal fats have become increasingly vital to the makers of high-energy-level poultry and livestock feeds. Feed manufacturers know rancidity is a factor that must be controlled. Fat rancidity can be controlled with liquid Resistalox. Easily handled during processing, Resistalox effectively stabilizes fat by fighting oxidative deterioration, combats rancidity and adds to the "shelf life" of feeds into which animal fat is incorporated.

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new arrivals before they come here. A farmer who plans to sell tells us, especially when he buys feed here. But we don't get all of them, that's for sure."

"No, of course we don't, Joe. And if we miss on one of them, that could mean from $1,000 to $3,000 or more of business that we would lose in one year," Pop said earnestly. "I read somewhere where a national organization made a survey on the cost of getting a new customer. They said advertising costs on this ran to $30 for every new customer obtained. Man, if we pay out $1 for every new customer obtained, we would get new ones for a lot less cost."

"I agree. Your idea certainly is worth trying."

"The time element is worth stressing," Pop said. "Even if we know of a new farmer moving in, let's give that $1 in trade to the first farmer telling us about it. That would build good will. I think we'd have farmers and their wives very alert on this deal. It's an easy way to earn an extra dollar. And farmers would ask each other at various meetings about new farmers moving in. We'd get coverage."

Joe smiled. "Yes, farmers may not get too excited about getting a regular milk and egg check, because they take such things more or less for granted. But this new customer $1 offer is something challenging. Just to win one of those prizes would tickle many farmers and their wives."

Pop Henley beamed, because Joe liked his idea. "As soon as we get the news of a new farmer moving in, we should act fast. Let's give such farmers a sudden welcome. You, or one of us should load all our giveaway stuff in the pickup—county maps, directories, calendars of events, free pencils, yardsticks, and such, and pop right out there and welcome the new family and give them these gifts. The quicker the better. The new farm family is always a little lonesome and bewildered. They like attention. They want to be a part of the friendly community to which they have moved. And if we move in early with a welcome—" Pop hesitated and grinned.

"Then we'll have a much better chance of getting his feed and allied products business," Joe filled in.

"Right," said Pop. "Competitors will be thinking the same thing. But if we institute this $1 reward idea, plus the sudden welcome service, Joe, we'll be a step ahead. Lots of dealers in this district don't call on new farmers sometimes until two or three weeks have passed."

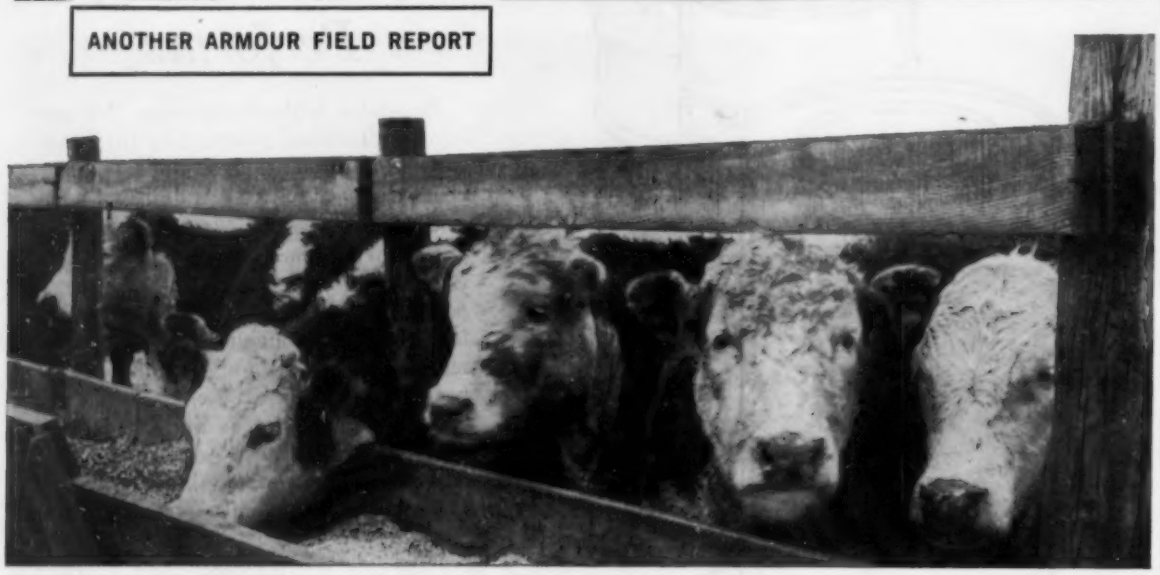
"I know it," Joe said. "It's one of those things a feed mill owner works in after the day's or week's rush is over."

"But if quick action can mean $1,000 and more business, it is worth it, isn't it?"

"It certainly is, Pop," said Joe. "This is a good idea and your next check will have a little bonus. Our usual practice you know—rewarding you fellows for bringing in good, business building ideas."

Pop chuckled. "Shucks, Joe, we are just applying the principles you've told us about in sales meetings. You offer us a bonus for each workable business idea we bring in. That gets us thinking. Lots of us have earned extra money that way. Now my idea applies in turn to the farmer. He gets a reward for turning in the name quickly of a new farmer in his area. Man, what you can accomplish when you give people incentive."

ANOTHER ARMOUR FIELD REPORT



Max Rosenstock, Idlewild Farm, Kingsley, Iowa finds DYNAFAC improves grade, practically eliminates feedlot bloat and founder, keeps cattle on feed better!

Max Rosenstock and his partner, Clarence Voss, have been feeding DYNAFAC for the past two years:

"It looked like a good product," they said. "We felt it deserved a fair trial under actual feedlot conditions. After testing it, we were so completely satisfied, that DYNAFAC is now a standard part of our feeding program."

"Dynafac gives us a number of direct benefits," says Mr. Rosenstock. "Since we started feeding it, we've had no trouble with bloat, and cattle stay on feed better—even with a high grain ration. The carcass quality of our animals is much higher, and they grade higher."

"When you add this to an average daily gain of 2.6 to 2.7 lbs. over a two-year period, you can see why we're sold on Dynafac!"

Mr. Rosenstock and Clarence Voss are only one example of the many progressive feeders who are switching to Dynafac. They represent a large and growing market for this proven feed additive.

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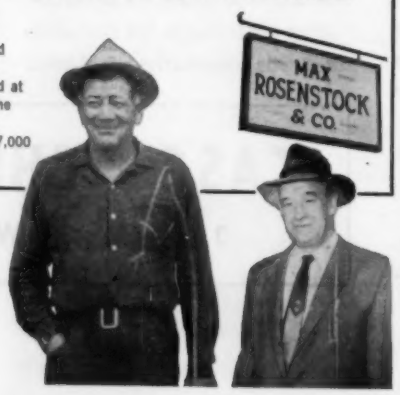
In 16 separate tests, in 6 states, averaging over 60 head per test, Dynafac showed a positive advantage sixteen times. Increase in daily gains ranged from 0.12 to 0.75 lbs. per head – averaged 0.32 lbs./day in favor of Dynafac feeding.

Max Rosenstock and Clarence Voss have 4,000 cattle on feed at all times. During the year, they turn out between 6,000 and 7,000 head of cattle.



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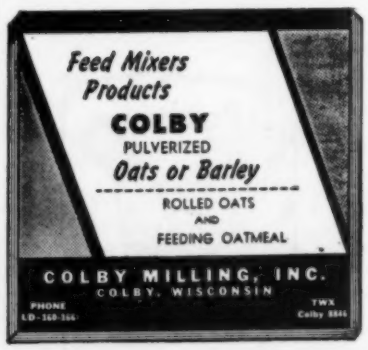

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FEEDSTUFFS

Coccidiosis, Turkey Feeding Discussed In Pennsylvania

UNIVERSITY PARK, PA.—Turkey feeding practices in the North Atlantic region were outlined as part of an address by Linwood Smith, Allied Mills, Buffalo, N. Y., at the recent Pennsylvania Poultry Federation meeting at Pennsylvania State University. He emphasized that many turkeys in the region are kept on feed past the point of minimum satisfactory finish.

Another speaker, Dr. George Christie, Eastern States Farmers Exchange, discussed coccidiosis and its control.

Mr. Smith noted that a crumbled type of feed is generally used up to 8-10 weeks in the North Atlantic region, and that from then on pellets seem to be readily accepted by most growers as the most efficient form of feed, in part at least because pellets cut down waste from wind-blowing and billing-out. Pellets on the ground around feeders are readily picked up by the birds and are not wasted.

"In the concentrated large-scale units, bulk feeds are used as a labor-saving measure. Automatic waterers are the rule. In some of these units one man has the responsibility of 10-15,000 turkeys," Mr. Smith related.

"The 30% protein starter is usually protected by a coccidiostat for the first 4-5 weeks. This normally costs about $3 a ton.

"In the North Atlantic region I believe blackhead preventive drugs are normally added to the feed at about the time the birds are 4-5 weeks old. In some other areas they find they need blackhead preventive drugs at earlier ages.

Feeding Programs

"There will be wider uses of the new drugs, but these are not and never will be a substitute for good sound management. The regular reduction of protein according to the needs of the growing turkey in our own program is accomplished with feeds of five levels ranging from a starter feed at 30% for the first four weeks, to developer for the 4-10 week period with a 26% protein, a 22% protein grower from the ages of 10-14 weeks, and an 18% grower for 14-18 weeks, and a 14% protein finisher from 18 weeks to market.

"When hens are fed separately from toms, as some flocks are now sexed, the hens should be offered the 14% finisher at 14 weeks of age from the recommendations of our own research farm. The hens mature at an earlier age than toms, and have a general tendency for fattening earlier than toms.

"An experimental group of hens at the research farm was placed on the 14% protein finisher at 14 weeks of age and had considerable finish with a fine growth rate at the time they were 18 weeks of age. In fact, they were finished well enough to be marketable at the 18-week age."

Excessive Finish

The speaker mentioned that many North Atlantic turkey producers often keep birds on feed "far beyond" the point when they have reached the minimum satisfactory finish.

"You will have to determine what the minimum satisfactory finish level is for your particular market, but over-finished birds are expensive to you," he said. Mr. Smith presented a table (it appeared in Feedstuffs Nov. 15, 1958) showing the feed required to produce an additional pound of gain for various weight turkeys.

COCCIDIOSIS CONTROL: Dr. Christie commented that the poultryman has come to expect 100% effectiveness from all anti-coccidial drugs, and is resentful when they fall short of this perfection.

"He has come to look upon a coccidiostat as an umbrella under which he can practice any or all forms of mismanagement and poor sanitation with impunity. He must be reminded constantly that drugs are but an aid in the control of disease and must be assisted in all possible ways by improved husbandry.

The speaker went on to say that research on the coccidiosis problem must be supported by the poultry industry, and not left entirely to drug and feed companies.

"Along with research must go improvement in our methods of diagnosis, and an appreciation by the poultryman of the importance of an accurate diagnosis. It is no longer sufficient to find a few hemorrhagic spots or a few oocysts and to say that the flock has coccidiosis. The species must be determined, and an accurate assessment of the degree of infection must be made," he said.

Dr. Christie noted that chickens today are subjected to many stresses all tending to reduce feed consumption. They are debeaked, vaccinated several times, and too often suffer from respiratory and other ailments. If feed consumption is reduced either because of illness or because the equipment is inadequate, the consumption of drug is likewise reduced and cannot be expected to act efficiently. By attention to the principles of good management other diseases and stress conditions must be prevented, and an adequate supply of high-quality feed must be constantly available, the speaker said.

Litter Infestation

He remarked also that massive build-ups of infective oocysts in the litter must be prevented. "We must recognize that this occurs only when ventilation is poor and when litter is allowed to become damp. It must be recognized, too, that infection must be taken into the house in the first place on the feet either of the poultryman himself or a visitor," he said, and advised poultrymen to cut down the traffic in chicken houses and exclude anyone not wearing disinfected footwear, and to attend to young chickens before walking on the more heavily seeded litter of older flocks.

Dr. Christie said he believes coccidiosis may be more adequately controlled in the future. "An over-all improvement in broiler management can be expected inasmuch as 90% of these are contracted. Large contractors can no longer afford sloppy management and we can expect more rigid requirements of growers." He said that there are at present at least two new drugs that offer considerable promise of improvement over those presently available.

The speaker said that the replacement pullet grower has "new hope now" with the introduction of the coccidiosis vaccine "CocciVac." He commended the vaccine.

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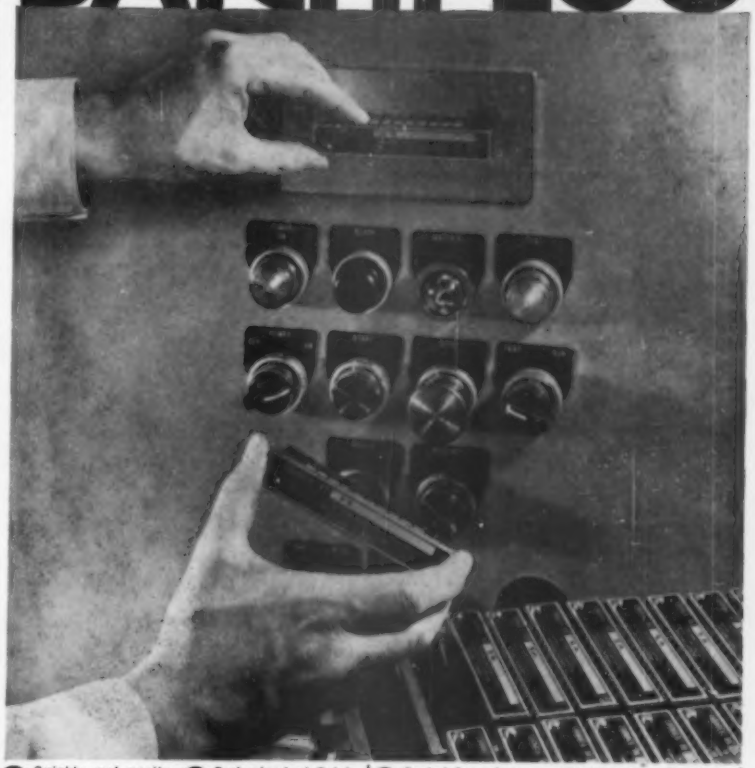

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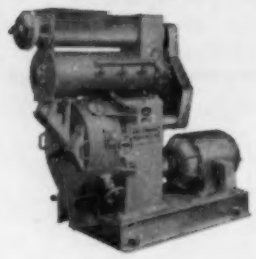

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PROMOTION—The main feature of Hess & Clark's new fall dairyman's special promotion, packaged in a 3-color "packer," is 12 Pen-SZ Syringes for controlling mastitis.

Hess & Clark Has Dairyman's Promotion

ASHLAND, OHIO—Hess & Clark's new fall dairyman's special promotion was recently announced. This new offer for modern dairymen includes 12 Pen-FZ syringes, one NFZ puffer, and one free Taylor (indoor-outdoor) dial thermometer.

The promotion is packaged in a 3-color "packer."

The main feature of the dairyman's special promotion is 12 Pen-FZ Syringes for controlling mastitis. Pen-FZ contains nitrofurazone, a chemical germ killer that kills germs by starving them to death before they can build up any resistance.

North Carolina Feed Use Ahead of 1957-58

RALEIGH, N. C.—Monthly commercial feed tonnages reported by the North Carolina Department of Agriculture July through May of the 1958-59 fiscal year were substantially larger, with one exception, than for the same months of 1957-58.

For the 11 months of the current fiscal year the total tons shipped as of June 1 were 1,422,343, compared with 1,242,897 for the same period a year earlier. Total tonnage for the entire 1957-58 fiscal year was 1,370,-315 tons.

May was the only month in which the 1957-58 feed tonnage (125,821) was larger than the 1958-59 total for the same month (122,189).

Minnesota's 1958 Feed Use Totals 1,250,278 Tons

ST. PAUL, MINN.—Commercial feedstuffs sold for consumption in Minnesota during 1958 amounted to an estimated 1,250,278 tons, the State Department of Agriculture reported in a recent bulletin. This total is the largest on record and about 14% greater than the 1957 total of 1,097,-689 tons.

The largest volume was in pig and hog concentrates and other hog feeds —a total of 235,914 tons.

In the poultry line, poultry mash concentrates led with 130,957 tons. Other poultry feed totals were: Scratch feeds and miscellaneous poultry mashes, 11,923 tons; chick starting and growing mashes, 107,397 tons; egg and laying mashes, 105,139 tons and turkey mashes, 110,656 tons.

In the dairy feed category, concentrates totalled 110,270 tons; dairy feeds and rations, 43,291 tons, and calf meals, 16,248 tons.

Minnesota's 1958 miscellaneous feeds volume was 38,105 tons and pet feeds consumption was 11,345 tons.

Test Shows Thyroxine Harmless to Cows

KNOXVILLE, TENN.—Dairy cows suffer no harmful carryover effects from eating thyroxine, a substance which increases milk production and steps up dairy cow metabolism, Tennessee researchers say.

Dr. E. W. Swanson and A. F. McFee, department of dairy husbandry at the University of Tennessee, found that dairy cows fed thyroxine were back to normal within two weeks after its feeding was discontinued, and that the cows remained normal. This was found by determining the amounts of hormone blood iodine in the cows' circulatory systems. Changes in these amounts reflect the degree of thyroid-like stimulation.

Dr. Swanson and Mr. McFee found that thyroxine doses which caused cows to increase their milk production resulted in a protein-bound iodine level that was three or four times that of normal. They also learned that these high levels were maintained better in winter feeding experiments with dairy cows than they were in summer.

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removed. These beans

TABLE 1. Experimental Outline (S-26

First Year or Fortieth...

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After being in the same feed family for 22 years and seeing the many changes that have taken place in this fast growing industry, it makes us feel justly proud to belong to the Wirthmore family.

In the Wirthmore family you not only watch the advancement and the new highs attained in feed, you are part of the movement in which there is excellent teamwork and cooperation from the top down to the field servicemen and the salesmen.

There is also the assurance of always having a uniform and quality product.

With all these combinations working for us, it is not difficult to meet the keen competition that exists today, to serve the farmer and continue to grow.

Laban Wenger

Horst's Mill, Lebanon, Pa.

INVESTIGATES WIRTHMORE — FINDS PERSONNEL WELL LIKED AND PRODUCTS EFFICIENT

Having decided to go into the feed business for myself, I wanted to represent a company that made quality merchandise and got good results.

I took a trip through the Wirthmore plant at Toledo and liked the care and precision that went into the making of Wirthmore Feeds.

Then I went a step farther. I wanted to see how it rated among dealers and users. I found all the way down the line dealers like the Wirthmore personnel, cordiality and efficiency of the products in the field.

I visited farms and found satisfaction for the results accomplished with the feed and appreciation for the service rendered by the service department.

I hope, in the not too distant future, my customers also will enjoy the results of Wirthmore Feeds and service.

Stephen D Sterling

Sterling Feed Service, Washington Court House, Ohio

40 YEARS WITH WIRTHMORE AND GOING STRONG

We want to let you know of our appreciation of the wonderful cooperation and assistance we have had from your organization.

We have seen a lot of changes in the poultry and dairy business, and have found your organization abreast with the trends, improving its formulas and delivery system; and that these things have been helpful in our growth.

Nels A Palm

Palm Grain Co., Lowell, Mass.

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TABLE 6. Effect of Heated, Unextracted

which received animal protein supple-

moisture and fiber content is only .02

TIME ON STARTER: Since the

Maryland Broiler Trial

Fat level, animal protein supplements, glycine, pyridoxine and unextracted soybeans tested with sexes separated.

By Dr. G. F. Combs, Dr. N. V. Helbacka and Prof. J. L. Nicholson
University of Maryland

Broiler Trial S-26 was conducted to obtain additional information on the performance of broiler chickens fed simplified corn soybean meal type rations. Most of the variables employed were based on results obtained in Trials S-23, 24 and 25.

This trial involved 32 lots, each consisting of 150 Vantress X Arbor Acre Crossbred chicks; one half of these pens contained males, and the other half contained females. The trial was completed on March 20, 1959 when the broilers were 10 weeks of age. Eight different starting rations and eight different finishing rations were involved, as shown in the experimental outline given in Table 1.

The composition and calculated analysis of the starting and finishing rations fed are given in Table 2. These rations included pelleted starting and finishing rations with 2% added fat, and mash feeds containing 6 and 7% added fat. All of these feeds were calculated to have C/P ratios of approximately 48:1 in the starters and 55:1 in the finishers.

Actual protein assays indicated that the C/P ratios were somewhat narrower than calculated as shown in Table 2. These "stretched" protein rations were used throughout this trial, in view of the excellent results obtained in the previous three trials.

The need for animal protein supplements (fish meal and poultry by-products meal) was tested further, but no special source of "whey factor" was included. Additional glycine, which had failed to improve results in a previous trial, was again tested. Also, 1 gm. of pyridoxine per ton of feed was included as a variable in view of recent results by Fuller and others at the University of Georgia.

Whole Fat Soybeans

The use of heated, ground, unextracted, whole fat soybeans as a replacement for the soybean oil meal and part of the supplemental fat in the ration also was studied. Ration series 7 and 8 are modifications of ration series 1, where heated, unextracted, ground soybeans have been substituted in place of the soybean oil meal, and part or or all of the fat.

The soybeans used in this trial were finely ground, heated with live steam under 15 lb. pressure for 7 min., and then air-dried to 13.5% moisture. At the end of the heat treatment, the moisture content was approximately 17%. With the equipment employed, it required approximately 10 min. to obtain 15 lb. of pressure. After the 7-min. period of heating at 15 lb. pressure, an additional 7 min. was required for the pressure to drop, after which time, the ground, heated soybeans were removed. These beans were prepared in equipment normally used for processing hydrolyzed poultry feathers.

One half the males and one half the females which were fed each of the eight starting rations were changed to their respective finisher feed at 4 weeks of age, while the other half were not changed to their finisher feed until 6 weeks of age. This had been done in the two previous trials (S-24 and S-25) to determine whether or not differences in performance of males and females would result when changed to a lower protein finishing ration at either 4 or 6 weeks of age.

Body weights and feed consumption records were taken at 4, 6, 8 and 10 weeks of age. At five days, the chicks were vaccinated for New Castle (interocular) and bronchitis, and at 3½ weeks, they were dusted with New Castle vaccine. No specific disease conditions were encountered during the test. Some difficulty did occur during the first few weeks as a result of the chicks eating litter. The difficulty is attributed to the inferior grade of peanut hull litter used, as it was contaminated with tobacco stems. This difficulty, however, is considered very minor since the average eight-week results obtained are comparable to those obtained in previous trials.

Ration series 1 and 2 are similar to those used in the previous three trials. All birds were processed in a commercial dressing plant and quality observations were made for each group of broilers. The 4, 6, 8, and 10-week average weights and feed conversions are summarized in Table 3 by sexes.

ANIMAL PROTEIN SUPPLEMENTS: Ration series 2 and 6 contained animal protein supplements (fish meal and poultry by-products meal). These are compared with the respective control ration series 1 and 5. The combined results are summarized in Table 4. These observations represent 12 pens of broilers in each series. As in the previous three trials summarized in the April 4, 1959 issue of Feedstuffs, the addition of these animal protein supplements resulted in a slight improvement in growth rate, but no improvement in feed conversion. In this trial, the differences amounted to .05 lb. at eight weeks of age as compared with an average of .06 lb. at eight weeks of age for the previous three Maryland Substation Trials. Also, no difference in feed conversion was observed in the previous three trials.

This constitutes, then, the fourth consecutive trial where slight differences in growth rate were obtained with the addition of animal protein supplements, although these differences are of such small magnitude that they are of questionable practical importance. Indeed, without any improvement in feed conversion, feed cost per unit of gain could scarcely have been improved from the addition of these supplements. It should be noted these rations have been supplemented adequately with methionine.

PELLETS, MASH AND FAT LEVELS: Ration series 5 and 6 contained 2% added fat, and these feeds were fed as either crumbles or pellets. Ration series 1 and 2 contained 7 and 6% added fat, respectively. These feeds were fed as mashes.

Previous substation work involving "stretched" protein levels had employed rations containing 6% and 7% added fat. These rations performed as well as control rations containing a

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TABLE 1. Experimental Outline (S-26 Completed March 20, 1959) Md. Agr. Exp. Sta., Salisbury, Md.

Description	Period 0-4 wks.	4-6 wks.	6-10 wks.
Corn-Soybean Meal Rations			
7% Added Fat Mash			
Basal Series	S-1	S-1	F-1
	S-1	F-1	F-1
	S-1	S-1	F-5 (2% fat pellet)
+0.2% glycine	S-3	S-3	F-3
+0.2% glycine + 1 gm. Pyridoxine	S-4	S-4	F-4
2% Added Fat Pellet			
Basal Series	S-5	S-5	F-5
	S-5	F-5	F-5
	S-5	S-5	F-1 (7% fat mash)
Corn-Unextracted Soybean† Rations			
7% Added Fat			
Mash	S-7	S-7	F-7
Pellet	S-8	S-8	F-8
Fish Meal-Poultry By Products Meal Containing Rations			
6% Added Fat Mash			
	S-2	S-2	F-2
	S-2	F-2	F-2
	S-2	S-2	F-6 (2% fat pellet)
2% Fat Pellet			
	S-6	S-6	F-6
	S-6	F-6	F-6
	S-6	S-6	F-2 (6% fat mash)

†Ground, heated with live steam for 7 min. at 15 lb. pressure, then air dried to 13.5% moisture.

TABLE 2. Composition of Starting and Finishing Rations (Trial S-26) Md. Agr. Exp. Sta., Salisbury, Md.

Ingredients	Starting Rations*† S-1 (mash)	S-2 (mash)	S-5 (pellet)	S-6 (pellet)	(S-7 mash) (S-8 pellet)	Finishing Rations*† F-1 (mash)	F-2 (mash)	F-5 (pellet)	F-6 (pellet)	(F-7 mash) (F-8 pellet)
	PARTS									
Ground yellow corn	1072.25	1134.75	1293	1276.75	1072.25	1163.5	1224.0	1345.5	1366.0	1163.5
Stabilized fat	140	120	40	40	.....	140	120	40	40	30
Fish meal, menhaden, 60%	.....	50	....	50	.....	.....	40	.....	40	.....
Poultry by-products meal	.....	75	....	75	.....	.....	60	.....	60	.....
Soybean meal, 50%	630	480	510	420	.....	500	375	420	315	.....
Whole processed soybeans‡	.....	.....	....	.....	870	.....	.....	.....	.....	685
Corn gluten meal	50	50	50	50	50	75	75	75	75	75
Dhy. alfalfa meal, 20% (150,000 I.U. of A/lb.)	25	25	25	25	25	40	40	40	40	40
Limestone	20	20	20	20	20	20	20	20	20	20
Dicalcium phosphate	42	28	42	28	42	40	28	40	28	40
Salt	8	6	8	6	8	8	6	8	6	8
Trace mineral mix¶	2	2	2	2	2	2	2	2	2	2
Choline Chloride, 25% mix	3	2	3	.....	3	4	3	2	1	4
DL-methionine	0.75	0.25	0.75	0.25	0.75	0.5	.....	0.5	.....	0.5
Special mix‖	7	7	7	7	7	7	7	7	7	7
Total, lbs.	2000	2000	2000	2000	2100	2000	2000	2000	2000	2075
Calculated Analysis (S-26)										
Prod. energy (Cal./lb.)	1051	1052	983	997	1001	1074	1074	1004	1026	1035
Protein, % (calc.)	21.9	22.0	20.6	20.7	19.7	19.5	19.4	18.5	18.7	17.9
Protein, % (N x 6.25)	23.1	.....	20.8	.....	21.0	20.4	.....	19.5	.....	18.8
Calories per lb./% prot. calc.	48.0	48.0	47.5	48.0	50.8	55.3	55.4	54.5	54.8	57.9
Calories per lb./%prot. (assay)	45.5	.....	47.3	.....	47.7	52.7	.....	51.6	.....	55.0
Crude fat, %	9.1	8.9	4.7	5.3	8.9	9.2	8.9	4.8	5.3	9.1
Crude fiber, %	2.6	2.5	2.7	2.6	3.30	2.7	2.7	2.8	2.7	3.3
Calcium, %	1.06	1.10	1.03	1.09	1.01	1.03	1.05	1.02	1.04	0.99
Phosphorus, total, %	.74	.71	.73	.71	.71	.70	.67	.70	.67	0.67
Phosphorus, avail., %	.48	.48	.48	.48	.46	.46	.45	.46	.45	0.44
Arginine, %	1.44	1.43	1.28	1.36	1.32	1.25	1.24	1.15	1.17	1.16
Lysine, %	1.14	1.19	.97	1.11	1.00	.96	.99	.85	.91	0.81
Methionine, %	.48	.49	.46	.48	.45	.44	.44	.43	.43	0.41
Cystine, %	.37	.37	.34	.36	.33	.33	.34	.32	.32	0.30
Tryptophane, %	.25	.25	.22	.23	.22	.22	.21	.20	.20	0.20
Glycine, %	1.12	1.29	.98	1.22	.98	.97	1.10	.88	1.03	0.86
Riboflavin, mg./lb.	2.8	3.0	2.8	3.0	2.8	2.8	2.9	2.8	2.9	2.8
Niacin, mg./lb.	24.	25.	25.	25.	24.	24.	25.	25.	25.	25.
Pantothenic acid, mg./lb.	8.2	8.0	8.1	8.0	8.2	8.1	8.0	8.1	8.0	8.1
Choline, mg./lb.	858.	853.	804.	735.	845.	845.	830.	714.	807.	837.
Vitamin A, I.U./lb.	4400.	4400.	4500.	4600.	4400.	5750.	5800.	5875.	5750.	5600.
Vitamin D_3 I.C.U./lb.	400.	400.	400.	400.	400.	400.	400.	400.	400.	400.

*Rations S-3 and F-3 differed from Rations S-1 and F-1, respectively, only in that they contained 0.2% glycine.
†Rations S-4 and F-4 differed from Rations S-3 and F-3, respectively, in that they contained 1 gram of pyridoxine/ton.
‡Wt. expressed on basis of 13.5% moisture; these were ground, then cooked for 7 min. at 15 lbs. pressure.
¶Supplies 60 ppm manganese, 1.2 ppm iodine, 2 ppm copper, 0.4 ppm cobalt, 25 ppm iron and 18 ppm zinc.
‖To contain per 7 lbs.: BHT (100%), 0.25 lbs.; choline chloride (100%) 1.0 lb.; menadione sodium bisulfite, 1 gm.; riboflavin, 4 gms.; niacin, 10 gms.; D-calcium pantothenate, 10 gms.; procaine penicillin, 4 gms.; sodium molybdate, 1 gm.; alpha tocopherol acetate, 1000 I.U.; DL-methionine, 0.75 lbs.; vitamin B_{12}, 6 mg.; vitamin A, 3 million I.U.; vitamin D_3, 0.8 million I.C.U.; and Unistat No. 1.

TABLE 4. Effect of Animal Protein Supplements on Broiler Performance (S-26)*

Age	Av. wt., lbs. Control	Av. wt., lbs. +Animal protein	Feed/weight Control	Feed/weight +Animal protein
4 wks.	0.97	0.98	1.70	1.71
6 wks.	1.96	1.98	1.81	1.81
8 wks.	2.91	2.96	2.06	2.06
10 wks.	4.02	4.06	2.27	2.27

*Each value based on data from six pens of 150 males each, and six pens of 150 females each.

TABLE 5. Comparison of 2% Added Fat Pelleted Feeds With 7% Added Fat Mash Feeds. (S-26)*

Ration 0-6 wks.	Ration 6-10 wks.	Av. gain, lbs. 10-wk. wt., lbs.	Av. gain, lbs. (6-10 wks.)	Feed/lb. (0-10 wks.)
High fat mash	High fat mash	4.04	2.04	2.22
High fat mash	Low fat pellet	4.04	2.06	2.28
Low fat pellet	High fat mash	4.05	2.08	2.24
Low fat pellet	Low fat pellet	4.07	2.12	2.31

*Each value based on results of two groups of 150 males each, and two groups of 150 females each.

TABLE 6. Effect of Heated, Unextracted Soybeans, Glycine and Pyridoxine (Vit. B_6) in Simplified Broiler Rations.

	No. pens†	Av. 10-wk. wt., lbs.	Feed/weight 0-10 wks.
Corn-Soybean 7% added fat mash + 0.2% glycine	2	4.01	2.21
+ 0.2% glycine + 1 gm. Vit. B_6/ton	2	3.86	2.22
	2	4.06	2.24
Av.		3.98	2.23
Heated, Unextracted Soybean Rations‡			
mash form	2	3.88	2.37(2.27)¶
pelleted form	2	3.94	2.32(2.23)
Av.		3.91	2.34(2.25)

†150 males or females per group.

‡Determinations revealed that the unextracted soybeans contained 13.5% moisture, 33.65% protein (N x 6.25) and 17.35% fat. This protein level was only 93% of the calc. value used in formulation, resulting in starting and finishing rations with slightly wider C/P ratios.

¶Adjusted to same nutrient base as controls.

TABLE 7. Effect of Time on Starter, By Sexes (Broilers)

	Males		Females	
	4 wks.*	6 wks.*	4 wks.*	6 wks.*
	Av. 8-wk. wt., lbs.			
S-24	2.99	3.10	2.61	2.57
S-25	3.23	3.29	2.73	2.75
S-26	3.19	3.28	2.62	2.66
Av.	3.14	3.22	2.65	2.66
	Feed/wt. (0-8 wks.)			
S-24	1.97	1.97	2.01	2.01
S-25	2.07	2.04	2.11	2.11
S-26	2.03	2.00	2.13	2.10
Av.	2.02	2.00	2.08	2.07

*Age finisher ration was started.

comparable fat level with additional protein.

The 2% added fat pelleted rations were used in this trial to determine whether or not they would perform equally well with properly supplemented, but "stretched" protein levels. In addition, some pens were changed from high fat mash feeds to low fat pelleted feeds at six weeks of age. Others were changed from low fat pelleted to high fat mash feeds at six weeks of age. This was done to determine whether or not such a change might influence feed intake and subsequent performance.

The results are given in Table 5. It would appear that it made little difference as to whether or not the low fat pellet or the low fat mash was used. Even when the birds were abruptly changed from one feed to another at six weeks of age, there was no difference in their 6 to 10-week gains or 10-week weights.

The slight differences in feed conversion between the high fat mash and low fat pellet would be expected since the high fat mash contains slightly more energy per lb. of gain. This work is being repeated in Trial S-27, but the results of this trial failed to show any real differences.

GLYCINE AND PYRIDOXINE SUPPLEMENTATION: Feed series 3 differed from feed series 1 in that it contained .2% added glycine. Feed series 4 further differed from this series in that it contained 1 gm. of pyridoxine per ton of feed in addition. Both of these series were corn soybean oil meal type rations containing 7% added fat and fed in mash form. The results are given in Table 6. In this table, the two groups which received the additional glycine actually had numerically lower weights at 10 weeks than the controls with no change in feed conversion. This is the fifth trial involving glycine supplementation of similar type broiler rations at the University of Maryland, and the average of all trials failed to show any real differences.

Those broilers which received the feed containing the added pyridoxine and glycine weighed numerically more than did the controls, averaging .06 lb. heavier. Although this difference is not considered meaningful, it is comparable to that of the pens which received animal protein supplements. Feed conversion also was comparable to that of the controls, and those which received animal protein supplements. Further studies are being conducted with pyridoxine to determine whether or not it might be responsible in part of the "animal protein" factor response consistently obtained in these trials.

HEATED, UNEXTRACTED, FULL FAT SOYBEANS: Ration series 7 and 8 contained heated, unextracted, ground, full fat soybeans as a replacement for all of the soybean meal and all or part of the added fat. Series 7 was fed as mash and series 8 as pellets. As indicated above, the soybeans used in this trial received a heat treatment of 24 min., which included 7 min. at 15 lb. pressure with live steam as a heat source.

Ration series 7 and 8 were formulated by merely adding sufficient heated, ground, full fat, unextracted soybeans as a replacement for all of the soybean meal and all or part of the added fat. Since there was a difference in moisture and fiber content of the unextracted soybean product, and the materials it replaced, the resulting formulas contained more than 2,000 lb. of mixture (Table 2). The feed conversions are given on the basis of both the actual feed consumption and the corrected feed consumption, considering this difference in moisture and fiber content. Also, it should be pointed out that the substitutions were made with assumed values for the protein and fat content of the particular soybeans used.

After the feeds were on test, laboratory analysis of the soybeans revealed that these contained 33.65% protein, 17.35% fat and 13.5% moisture. This protein content was only 93% of that calculated and used in formulation. Subsequent protein assay of the total feeds indicated that the C/P ratio of the starting and finishing feeds with the processed soybeans was slightly wider than that of the control feeds containing soybean meal (see Table 2).

The results obtained with heated, unextracted soybean rations were not quite as good as that obtained with the control rations, although very little difference was observed. Since glycine and pyridoxine did not appear to have any real effects in this trial, these also may be considered as controls.

Average ten-week weights for the three series are .07 lb. greater than the average for the two unextracted soybean ration series. The difference in feed conversion after correction for moisture and fiber content is only .02 in favor of the control feeds.

In view of the fact that the soybean feeds were at a slight disadvantage in terms of protein level, this slight difference does not appear too important. Further studies are underway, but it would appear that there will be no real problem in processing full fat soybeans for broiler feeding if this appears to be economically sound.

TIME ON STARTER: Since the time on starter to four or six weeks has been studied in the two previous trials, the results of Sub-station Trials S-24, 25 and 26 are summarized in Table 7. The two previous trials were carried to eight weeks only; hence, only the eight-week results of this trial are presented.

The average eight-week weights and feed conversions of females were

TABLE 8. Summary of Broiler Data by Sexes (S-24, 25 & 26)

Av. wt., lbs.	4 wks.	6 wks.	8 wks.	10 wks.*	12 wks.†
males	1.17	2.11	3.21	4.42	5.64
females	1.02	1.79	2.66	3.60	4.54
Av. gain, lbs.	0-4 wks.	4-6 wks.	6-8 wks.	8-10 wks.	10-12 wks.
males	1.08	0.94	1.10	1.21	1.22
females	0.93	0.77	0.87	0.94	0.94
Feed cons./wt. (cumul.)	0-4 wks.	0-6 wks.	0-8 wks.	0-10 wks.	0-12 wks.
males	1.60	1.80	2.00	2.22	2.48
females	1.64	1.85	2.07	2.33	2.62
Feed cons./gain	0-4 wks.	4-6 wks.	6-8 wks.	8-10 wks.	10-12 wks.
males	1.74	2.08	2.38	2.76	3.41
females	1.80	2.16	2.51	2.93	3.74
Inst. Feed/gain at‡	4 wks.	6 wks.	8 wks.	10 wks.	12 wks.
males	1.94	2.24	2.54	3.10	3.80
females	2.01	2.34	2.71	3.25	4.34
Feed cost/lb.¶ (cumul.)	0-4 wks.	0-6 wks.	0-8 wks.	0-10 wks.	0-12 wks.
males	7.20	8.10	9.00	10.00	11.15
females	7.38	8.32	9.40	10.50	11.80
Feed cost/lb. gain¶	0-4 wks.	4-6 wks.	6-8 wks.	8-10 wks.	10-12 wks.
males	7.83	9.35	10.70	12.40	15.35
females	8.10	9.72	11.30	13.15	16.80
Feed cost/lb. inst.¶ gain at	4 wks.	6 wks.	8 wks.	10 wks.	12 wks.
males	8.75	10.05	11.40	13.95	17.10
females	9.05	10.50	12.20	14.60	19.50

*10-week data based on results of S-26 only. However, the average data for the previous periods for all three tests was almost identical with that obtained in S-26.

†Extrapolated data for 10-12 week period.

‡Instantaneous feed conversion is calculated to be the amount of feed required to put on the next increment of gain.

¶Feed at 4.5 cents/lb. These averaged about 1040 Calories of productive energy/lb. feed.

TABLE 9. Comparison of Sexes (Based on Trials S-24, 25 & 26)*

Av. live wt., lbs.	Sex	Required Age, wks.	Cumulative Feed/wt.	Inst.† Feed/gain	Feed Cost‡ per lb. gain: Cumul., weight	Feed Cost‡ per lb. gain: Inst., gain
2.25	M	6.25	1.82	2.26	8.20	10.15
2.25	F	7.1	1.96	2.51	8.80	11.30
2.50	M	6.75	1.87	2.34	8.40	10.50
2.50	F	7.65	2.03	2.63	9.12	11.85
2.75	M	7.25	1.91	2.42	8.60	10.85
2.75	F	8.20	2.09	2.75	9.40	12.40
3.00	M	7.65	1.96	2.49	8.80	11.20
3.00	F	8.75	2.16	2.87	9.70	12.90
3.25	M	8.1	2.01	2.57	9.05	11.60
3.25	F	9.25	2.23	3.00	10.05	13.50
3.50	M	8.5	2.05	2.65	9.22	11.90
3.50	F	9.8	2.30	3.19	10.45	14.35
3.75	M	8.9	2.09	2.74	9.40	12.35
3.75	F	10.3	2.37	3.38	10.65	15.20
4.00	M	9.3	2.14	2.84	9.65	12.80
4.00	F	10.85	2.45	3.66	11.00	16.50
4.25	M	9.75	2.19	2.97	9.85	13.35
4.25	F	11.35	2.53	3.96	11.40	17.80
4.50	M	10.15	2.23	3.09	10.05	13.90
4.50	F	11.95	2.61	4.30	11.75	19.35

*Based on data of Table.

†Amount of feed required for the instantaneous gain at a given size.

‡@ 4.5 cents/lb. for feed.

TABLE 3. Summary of Results S-26
Md. Agr. Exp. Sta., Salisbury, Md., March 20, 1959

Average Body Weights, lbs.

Period & Rations 0-4	4-6	6-10	Males 4 wks.	6 wks.	8 wks.	10 wks.	Females 4 wks.	6 wks.	8 wks.	10 wks.	Both Sexes 4 wks.	6 wks.	8 wks.	10 wks.
S1	S1	F1	1.03	2.14	3.21	4.43	0.93	1.82	2.67	3.59	0.98	1.98	2.94	4.01
S1	F1	F1	0.98	2.03	3.09	4.28	0.87	1.70	2.50	3.39	0.93	1.87	2.80	3.84
S1	S1	F5	1.00	2.13	3.18	4.47	0.95	1.85	2.64	3.63	0.98	1.99	2.91	4.05
S3	S3	F3	1.02	2.09	3.16	4.30	0.89	1.74	2.52	3.41	0.95	1.92	2.84	3.86
S4	S4	F4	1.03	2.13	3.25	4.40	0.99	1.92	2.83	3.72	1.01	2.03	3.04	4.06
S5	S5	F5	0.99	2.11	3.20	4.51	0.90	1.76	2.56	3.58	0.95	1.94	2.88	4.05
S5	F5	F5	1.07	2.16	3.25	4.56	0.97	1.87	2.79	3.80	1.02	2.02	3.02	4.18
S5	S5	F1	1.02	2.11	3.24	4.46	0.91	1.79	2.59	3.54	0.97	1.95	2.91	4.00
S7	S7	F7	0.99	2.10	3.14	4.28	0.93	1.78	2.56	3.48	0.96	1.94	2.85	3.88
S8	S8	F8	0.99	2.04	2.99	4.26	0.90	1.76	2.59	3.61	0.95	1.90	2.79	3.94
S2	S2	F2	1.07	2.14	3.38	4.54	0.95	1.83	2.70	3.58	1.01	1.99	3.04	4.06
S2	F2	F2	1.04	2.09	3.16	4.36	0.91	1.80	2.50	3.46	0.98	1.95	2.83	3.91
S2	S2	F6	1.03	2.22	3.23	4.37	0.92	1.81	2.65	3.66	0.97	2.02	2.94	4.02
S6	S6	F6	1.05	2.19	3.31	4.46	0.90	1.81	2.70	3.72	0.98	2.00	3.00	4.09
S6	F6	F6	1.05	2.13	3.26	4.59	0.93	1.83	2.70	3.74	0.98	1.98	2.98	4.17
S6	S6	F2	1.04	2.13	3.27	4.50	0.93	1.85	2.71	3.69	0.99	1.99	2.99	4.10
Average			1.03	2.12	3.21	4.42	0.92	1.81	2.64	3.60	0.98	1.97	2.93	4.01

Feed Required/lb. weight

Period & Rations 0-4	4-6	6-10	Males 4 wks.	6 wks.	8 wks.	10 wks.	Females 4 wks.	6 wks.	8 wks.	10 wks.	Both Sexes (averaged) 4 wks.	6 wks.	8 wks.	10 wks.
S1	S1	F1	1.61	1.73	1.96	2.18	1.64	1.80	2.02	2.25	1.63	1.76	1.99	2.21
S1	F1	F1	1.67	1.76	1.97	2.14	1.66	1.79	2.05	2.25	1.67	1.77	2.01	2.20
S1	S1	F5	1.63	1.73	2.01	2.23	1.64	1.79	2.08	2.30	1.64	1.76	2.04	2.27
S3	S3	F3	1.62	1.71	1.95	2.16	1.64	1.80	2.06	2.28	1.63	1.75	2.00	2.22
S4	S4	F4	1.63	1.73	1.95	2.18	1.67	1.83	2.07	2.29	1.65	1.78	2.01	2.24
S5	S5	F5	1.72	1.80	2.02	2.23	1.79	1.88	2.16	2.37	1.76	1.84	2.09	2.30
S5	F5	F5	1.70	1.82	2.09	2.29	1.72	1.90	2.17	2.40	1.71	1.86	2.13	2.35
S5	S5	F1	1.76	1.84	2.05	2.22	1.79	1.90	2.13	2.33	1.78	1.87	2.09	2.28
S7	S7	F7	1.85	1.91	2.11	2.31	1.85	2.00	2.23	2.44	1.85	1.96	2.17	2.37
S8	S8	F8	1.75	1.83	2.11	2.29	1.76	1.91	2.16	2.35	1.76	1.87	2.14	2.32
S2	S2	F2	1.67	1.74	1.95	2.18	1.68	1.83	2.06	2.31	1.68	1.79	2.01	2.24
S2	F2	F2	1.63	1.75	2.00	2.18	1.69	1.85	2.16	2.33	1.66	1.80	2.08	2.26
S2	S2	F6	1.74	1.77	2.00	2.22	1.71	1.81	2.12	2.36	1.73	1.79	2.06	2.29
S6	S6	F6	1.72	1.81	2.06	2.28	1.80	1.89	2.15	2.37	1.76	1.85	2.11	2.32
S6	F6	F6	1.69	1.81	2.06	2.26	1.77	1.87	2.15	2.39	1.73	1.84	2.11	2.33
S6	S6	F2	1.67	1.75	1.96	2.17	1.71	1.82	2.04	2.24	1.69	1.79	2.00	2.21
Average			1.69	1.78	2.02	2.22	1.72	1.82	2.11	2.33	1.70	1.80	2.06	2.27

TABLE 10. Summary of Quality Observations (S-26)

Ration Variable	% of Birds With Parts Condemned	% Whole Birds Condemned	Grade A	Grade B	Grade C	No Grade	Dressing % with Giblets	Feather Removal—Good	Feather Removal—Fair	Feather Removal—Poor	Carcass Discoloration—Good	Carcass Discoloration—Fair	Carcass Discoloration—Poor	Pins—Good	Pins—Fair	Pins—Poor
Control	11.0	.35	79.9	6.7	13.1	0.3	72.21	11.0	55.3	33.7	85.1	9.9	5.0	96.8	2.5	0.7
+ 0.2% glycine .	10.6	1.03	78.1	8.9	11.3	1.7	71.76	10.1	47.0	42.9	81.2	14.1	4.7	90.6	6.7	2.7
+ 0.2% glycine + Pyridoxine ..	12.1	1.38	79.6	5.2	14.5	0.7	69.96	10.0	43.8	46.2	95.5	4.1	0.3	96.6	6.7	2.7
Unext. soybeans (M)	13.1	1.04	76.2	9.0	13.8	1.0	72.32	5.6	54.0	40.4	88.2	11.4	0.4	95.2	4.5	0.3
Unext. soybeans (P)	12.7	.35	76.7	8.8	14.5	0.	71.87	6.7	48.7	44.6	88.8	8.9	2.3	96.6	3.0	0.4
2% added fat (P)	17.6	.80	75.3	7.4	17.0	0.3	71.57	12.3	48.6	39.1	85.0	10.1	4.9	96.4	3.5	0.1
6 or 7% added fat (M)	12.0	.62	79.8	6.5	13.3	.4	72.56	10.9	53.0	36.1	82.7	13.3	4.0	95.4	3.2	1.4
Corn-soybean rations	14.5	.82	77.9	6.6	15.3	.2	71.74	16.7	48.2	35.1	85.3	10.5	4.2	96.0	3.5	0.5
+ Animal protein	17.8	.88	72.3	8.6	18.5	0.6	71.65	18.2	45.8	36.0	85.6	10.9	3.5	96.7	2.8	0.5
Starter to 4 weeks	17.8	.48	73.4	8.4	17.9	0.3	72.01	13.9	49.1	37.0	85.2	12.2	2.6	95.7	3.7	0.6
Starter to 6 weeks	13.3	.97	76.9	7.9	14.8	0.4	71.87	9.1	52.7	38.1	83.4	11.4	5.2	96.8	3.0	0.2
6 or 7% fat starter & finisher (M) .	11.3	.88	79.9	7.2	12.7	0.2	71.91	8.2	53.5	38.3	83.6	9.9	6.5	97.2	2.1	0.7
2% fat starter, 6 or 7% fat finisher .	21.5	.53	70.4	8.5	20.6	0.5	71.78	21.0	44.3	34.7	85.4	10.8	3.8	96.8	2.8	0.4
6 or 7% fat starter, 2% fat finisher	16.9	1.58	69.4	10.2	19.3	1.05	71.08	20.9	39.9	39.2	84.9	10.4	4.7	98.2	1.4	0.4
2% fat starter & finisher (P) ...	20.8	.87	74.5	8.3	16.5	0.7	71.82	10.1	48.3	41.6	82.5	12.0	5.5	96.2	3.4	0.4
All Males	22.7	.74	70.6	5.8	23.1	0.4	70.86	4.8	46.5	48.7	83.5	12.3	4.2	98.8	1.0	0.2
All Females	7.6	.98	79.5	10.7	9.0	0.8	71.62	19.5	48.9	31.6	87.7	9.3	3.0	93.5	5.6	0.9

not different, regardless of whether the starter was terminated either at four or six weeks.

When the males were placed on the finishing ration at four weeks, growth rate was slightly poorer in each of the three trials. If one compares the four to six-week performance in these three trials, there is essentially no difference; yet, a difference is apparent after eight weeks. This might suggest that the broiler is capable of modifying its body composition over a short period of time as a means of permitting over-consumption under periods of nutritional stress without necessarily showing differences in actual weight gains.

The fact that differences do appear at eight weeks would suggest the probability that compositional differences had occurred during the four to six-week period. Apparently, longer periods of feeding are required to determine whether or not males and females have important differences in requirement for protein.

It would appear that finishing rations involving "stretched" protein levels such as used here may be started for females as early as 4-5 weeks, and for males as early as 5-6 weeks. For mixed sexes, five weeks would appear to be the logical time for changeover with rations containing comparable effective protein levels.

SUMMARY OF BROILER GROWTH AND FEED CONVERSION DATA BY SEXES: The results of Trials S-24, 25 and 26 for four, six and eight weeks and the results of S-26 for 10 weeks are tabulated in Table 8. The average results obtained in Trial S-26 at six and eight weeks were essentially identical to those obtained on the average for all three trials, so the 10-week data for Trial S-26 can justifiably be added.

By plotting these data, results for the period from 10-12 weeks were extrapolated, and also are shown in Table 8. This table shows average weights, gains, cumulative and period feed conversions, and accumulative and period feed costs.

The feeds used in these trials on the average contained approximately 1,040 calories of productive energy per pound. An average feed cost of 4.5¢ per pound has been assumed for the calculations. In addition, instantaneous feed conversions have been obtained by plotting the period feed conversions and passing a line through the center points of these for each period. In this way, one can estimate the actual instantaneous conversion, or the amount of feed required for each increment of gain at any given time.

For example, if the instantaneous feed conversion at 10 weeks for males is 3.1, this would mean that 3.1 lb. of feed would be required for the next pound of gain made by the entire group of males at 10 weeks of age. This has been computed in order to show more clearly the increasing feed costs which result as broilers reach heavier weights.

Although this table reveals differ-

(Turn to page 34)

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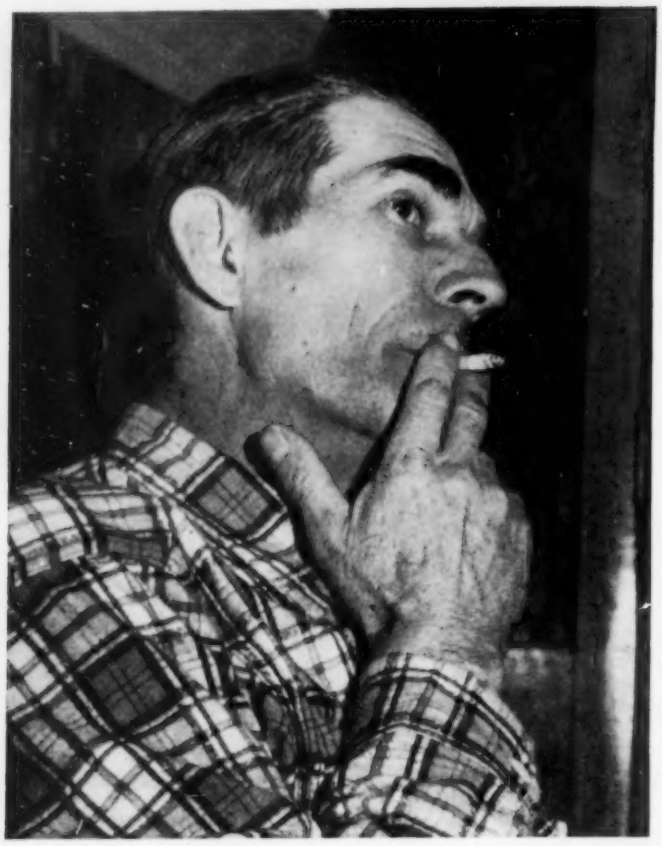
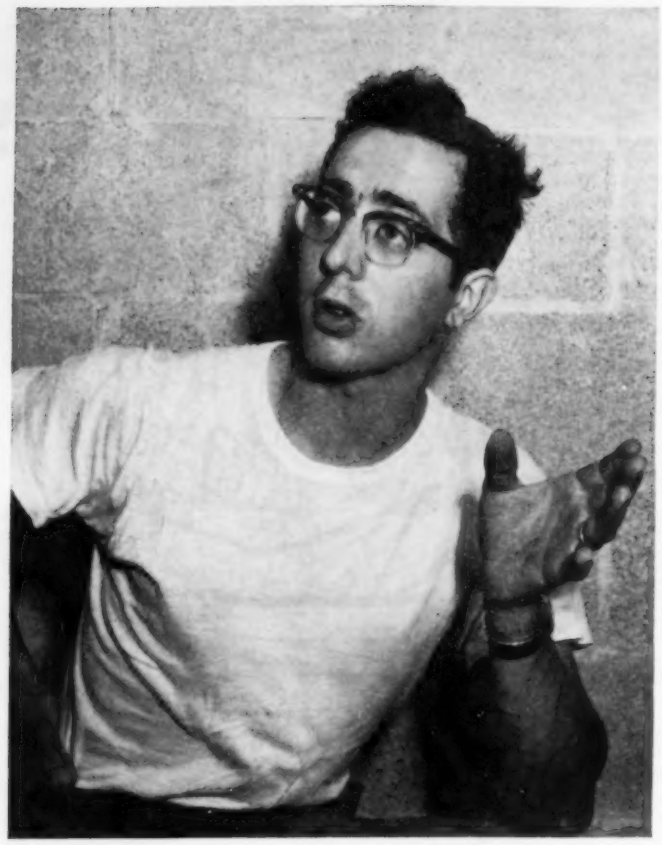


1. *"Production usually dropped in hot weather."*



2. *"I had to have higher hatchability."*

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1. Ralph Jaroch, Waukesha, Wis.

"Four weeks after caging my pullets they were in about 20% production. I tested nf-180 by feeding it to 418 birds in one row. Two weeks later they had jumped from 138 to 358 eggs a day. And they averaged 75% production right through the 5 hot summer months when I usually had a drop in production. I'm through monkeying around . . . now, I give all my birds feed with nf-180 in it."

2. Robert Keller, Nottingham, Pa.

"I produce around 1150 dozen hatching eggs a week. So steady production and high hatchability are important. After testing nf-180, I switched entirely to it. And the last three hatches of my eggs came off at 87% . . . which paid me a bonus of $172.00 in one month. I also like the steadier production that nf-180 gives. I think nf-180 really does the job."

3. J. Russell McKarns, West Unity, O.

"Four years ago I began losing hogs to necro and bloody dysentery. We used some other recommended products but didn't get results. Then my feed company said to try nf-180. We tested it on half the sick pigs and in a week they were back pretty near to normal. And once they were treated, they didn't come down with scours again. If it hadn't been for nf-180, we'd have been out of the hog business. But with nf-180, we can control the disease. I'm mighty high on nf-180."

4. Ian S. Thompson, New Hope, Pa.

"In these days of keen competition and awful egg prices, every avenue must be employed to hold up production and cut costs. And I honestly think that if you are anxious to make out in the business, you have to have nf-180. It's cut my mortality to the lowest ever. My feed conversion is running 3.5 lbs. to a dozen eggs. And at the end of 14 months of lay, when I'm scheduled to sell out the old birds, I'm still getting 60-65% production. Now, I plan to change my replacement schedule and keep my birds an extra 4 to 6 weeks."

3. *"Scours were driving me out of the hog business."*

4. *"I wanted increased production, lower costs."*

company furnished it with nf-180"

Feed company research shows nf-180 even surpasses our claims

These four men are just a sample of the thousands who have switched to nf-180 . . . often after doing their own private testing beforehand.

Several major feed companies have tested nf-180, too. One company with extensive research farm facilities found in making its own comparisons that results considerably exceeded the conservative claims which have been made by Hess & Clark. As a result, that company now includes an nf-180 medicated layer ration in its line of feeds. (Many other feed manufacturers also regularly produce and sell nf-180 medicated feeds for poultry and swine.)

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ences in growth rate, feed conversion and feed cost for males and females when compared by weeks, the difference becomes much greater when compared by sexes for birds of the same weights. Comparisons at comparable weights are given in Table 9. These values have been obtained from the data presented in Table 8. Marked differences in age required by sexes to reach a given weight, the cumulative feed conversion by sexes, as well as differences in instantaneous feed conversions for each of the sexes, are striking at similar weights. Estimated feed costs, based on feed at 4.5¢ lb. are also included.

The results show that, although males can be reared to any given weight appreciably cheaper than females, considering feed cost alone, the feed cost progressively increases for either sex as heavier weights are obtained. It should be clearly understood, however, that in calculating the cost of producing broilers, feed cost is only one factor to be considered. In addition, the differences in dressing percentages and cost of processing different weight birds will enter into the decision as to which size broiler is really the most economical for the industry to produce.

QUALITY OBSERVATIONS: All the birds were processed at the end of 10½ weeks, and market quality observations were obtained. These are summarized in Table 10 by dietary variables. Most of the observations fall within normal limits, indicating that the ration had little effect on the carcass quality. At the time of processing, the average weight of all birds was approximately 4.3 lb., with an average dressing percentage of 70.9 for the males and 71.6 for the females. The information given in the table concerning the carcass grades, percent of whole birds condemned, percent of birds partially condemned, and other quality observations should be of interest to broiler processors. Additional studies on quality observations are being conducted. Presently, tenderness studies between males and females are being tested.

SUMMARY: The results of this trial support the observations made in previous trials (S-23, 24 and 25). It is noteworthy that excellent results consistently have been obtained with very simplified corn soybean oil meal type rations. The possibility that pyridoxine might be part of the "fish factor" response in such practical diets is intriguing, although the present limited results do not permit such a conclusion. These rations did not respond to glycine supplementation.

It appears that "stretched" protein rations can be successfully employed with feeds containing either 2% or 7% added fat. No apparent effect was observed in this trial where rations were changed at six weeks from high fat mash to low fat pellet, or from low fat pellet to high fat mash.

Although a slight difference has been obtained in the requirement for protein by males (versus females), the difference was not great. It would appear that finishing rations comparable to those used in this trial might be satisfactorily started for females as early as four weeks, and for males as early as five weeks, without difficulty. For mixed sexes, changeover at five weeks seems most desirable. Differences in quality due to ration were not detected on the processed birds.

The results obtained here with the substitution of heated, ground, unextracted, full fat soybeans as a replacement for all of the soybean meal and part or all of the added fat in these simplified "stretched protein" broiler rations indicate that little difficulty would be encountered in using soybeans in this matter if it becomes economically sound to do so.

ACKNOWLEDGEMENTS: The authors are indebted to the Campbell Soup Co., Salisbury, Md., for providing facilities and assistance in the processing of these broilers; to Mardell Poultry By-Products Co., Inc., Salisbury, for supplying the poultry by-products meal and processing the ground, unextracted soybeans; Merck & Co., Inc., Rahway, N.J., for the special mix and pyridoxine used in the ration; American Cyanamid Co., Pearl River, N.J., for the New Castle and bronchitis vaccine; Monsanto Chemical Co., St. Louis, Mo., for the glycine, and Dr. Salsbury's Laboratory, Charles City, Iowa, for Unistat No. 1.

Livestock Specialist Joins Burrus Mills

FORT WORTH, TEXAS — Ray Martin, livestock feeding speicalist, has joined Burrus Feed Mills, maker of Texo Feeds, as livestock specialist, according to Wesley E. Ballmann and Charles W. Harris, co-managers of the Fort Worth based company.

Ray Martin

Mr. Martin received his B.S. degree in agriculture at Sam Houston College, Huntsville, Texas. He worked with cattle and livestock while employed by A. P. King, Winfield, Texas.

He had previously been associated with Burrus Mills in addition to acquiring a background while teaching school for three years in Mount Vernon, Texas. Prior to his association with Burrus Feed Mills, Mr. Martin worked as a field representative for the Borden Milk Co., Tyler, Texas.

Central Soya Dividend

FT. WAYNE, IND.—The directors of Central Soya Co., Inc., Ft. Wayne, have declared a quarterly cash dividend of 50¢ per share on the capital stock of the company payable Aug. 15 to stockholders of record at the close of business, July 31, 1959, according to an announcement by Harold W. McMillen, chairman of the board.

At the same time, the board of directors also declared a year-end 2% stock dividend payable Aug. 15 to stockholders of record at the close of business, July 31, 1959.

This is the fourth quarterly dividend of the current fiscal year and a continuation of the company's record of cash dividends, which has been uninterrupted since 1942, according to Mr. McMillen.

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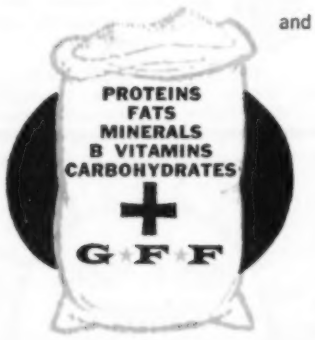

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Farm Store Installs Bulk Station

"Farmers . . . are sold on the system. We bought a bulk truck last year to help us handle this new, enlarged feed program."

By Al P. Nelson
Feedstuffs Special Writer

When the Fairmont (Minn.) Farm Store was faced with an expansion problem, the owners came up with an interesting solution.

They installed a complete bulk station several blocks from their main street store, and in this bulk station, consisting of 11-14 ton capacity metal storage tanks, they stored concentrates and complete feeds.

The cost of the bulk station was $14,000. It is equipped with a central auger, and also a Howe scale weigh house. Here up to 1.5 tons of feed can be weighed at one time. It is also possible to give the farmer a stamped weigh ticket, along with a label of his bulk feed showing the ingredients. Then the bulk truck driver can give the farmer this stamped ticket when he delivers the feed.

"Quite a few farmers come to watch this bulk station operate," states Martin Welchlin, who owns the business along with Keith and Calvin St. John. "Once they know just how the feed is handled and delivered, they are sold on the system. We also bought a bulk truck last year to help us handle this new and enlarged feed program."

The bulk station was opened last December, and farmers were shown how it operates. Immediately there was an increase in the sale of complete feeds and also concentrates, the owners report. The firm ran several advertisements in local papers picturing the new bulk plant in photos and with copy, and this aroused much interest.

Previous to the erection of the bulk storage plant, these feed dealers had built a fine volume on grinding and mixing with their mobile unit (Champion). However, they needed a service for complete feeds in bulk. Since the mobile service was going over so well, it was decided to keep it operating and install a bulk storage plant and bulk service, instead of adding a stationary mill.

The Champion mobile mill, according to Mr. Welchlin, can grind three tons of shelled corn at one time, or two tons of oats. When grinding three tons of corn the charge is $4 for the first ton, $2 for the second, and $2 for the third, or a total of $8. On dairy feed $6 per batch is charged. Hog feed is $8 per batch. There is a reduction of $1 for the second batch a customer orders on the same day.

"We are operating our mobile service within a radius of about 15 miles," states Mr. Welchlin. "We like to do most of our business close to home, for this reduces travel costs."

To build business for the mobile service, and for the bulk station, the firm has one salesman in the field at all times. Once a week he also does resale work with a Wayne Feeds salesman. The company will also do poultry service work for its customers.

Thus, through field work, resale programs and poultry service, the Fairmont Farm Store staff is able to reach most farmers in the immediate region. Regularity of calls on farmers has done much to win many new accounts, reports Mr. Welchlin.

The Fairmont Farm Store also owns a Ranger weigh scale with another feed dealer in the area. They have set up dates when each can use the scale, and this arrangement works out very well. Mr. Welchlin and his partners report that the weigh scale has done a great deal in a stepped up feed sale program. The management of the store usually urges farmers to begin weighing the pigs at from 125 lb. to marketing time, when the grind and mix program can provide some excellent weight gaining results.

Cattle are weighed whenever the cattle raiser wishes to begin such a program.

"A livestock weighing program is a great deal of work, it is true," reports Mr. Welchlin, "but it gives us an opportunity to discuss feed and weight gain with the raiser. And the top-flight hog and cattle raisers are the customers who will listen to our feed presentations. They wish to study every cost angle in this competitive market."

Quite a few hog feeders are using pellets for baby pigs up to 125 lb. or so, but Fairmont Farm Store experience has been that the same gains can be made cheaper with a grind and mix program, using the right amounts of concentrate.

Promotional Efforts

An annual ham day staged by Fairmont Farm Store has proved to be an excellent good will builder. This year a ham was given to each customer who bought a ton of feed. If a man bought two tons of feed he received two hams. In addition, there were many attendance prizes. The Fairmont Farm Store served ham sandwiches and coffee all day long. When the results were totaled at the end of the day, 123 tons of feed had been sold. It was an event which farmers talked about for a long time.

Another promotional event which the Fairmont Farm Store takes part in, is the annual Egg Institute held in Fairmont, with the sponsorship of the Chamber of Commerce and various agricultural organizations. Thousands of farm people come to this affair, where quality eggs are on display, and where talks and movies feature quality egg production. The Fairmont Farm Store has an exhibit at this institute, and also contributes toward its expense. A big feature of the show is the auctioning of the prize winning premium eggs for charity. Some of the eggs bring $500 doz.—for charity.

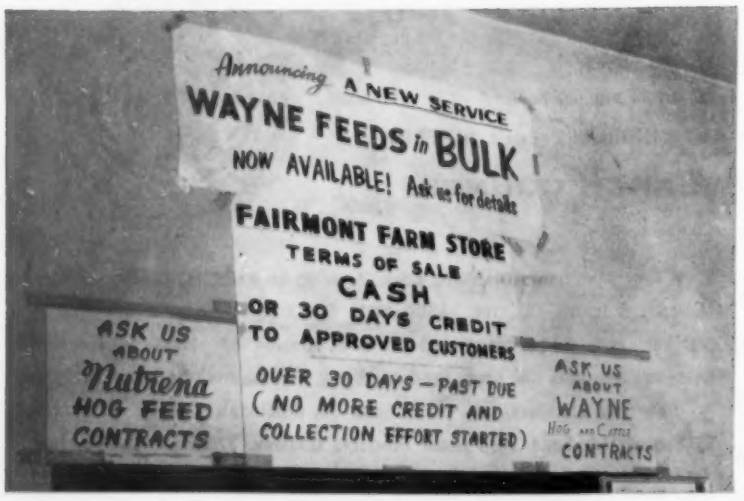
This feed firm also exhibits at a local builders show each year, stressing its line of ventilation for cattle, poultry and hog housing. This indicates that the three owners are not forgetting any opportunities for extra sales, and this policy has paid off in

(Turn to page 40)

FARM STORE OWNERS—Owners of the Fairmont (Minn.) Farm Store are (left to right) Calvin St. John, Martin Welchlin and Keith St. John. The firm recently installed a new bulk plant. Calvin devotes much of his time to field service work, Mr. Welchlin is the store manager and Keith handles the store deliveries.

INVENTORY CHART—When the Fairmont (Minn.) Farm Store installed a bulk station several blocks from the store, this bulk feed inventory chart was set up in the store to show how much feed is in the tanks at all times.

NEW FACILITIES—Shown are the new bulk truck and bulk tanks of the Fairmont (Minn.) Feed Store. The firm installed a complete bulk station, and also has a mobile mill service.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TO APPROVED CUSTOMERS
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ASK US ABOUT Nutrena HOG FEED CONTRACTS
ASK US ABOUT WAYNE HOG AND CATTLE CONTRACTS

CREDIT PROGRAM—The credit policies of the Fairmont (Minn.) Farm Store are clearly stated in this sign in the firm's office. The company stresses the importance of buying for cash and meeting credit payments when due.

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Personal Touch service by
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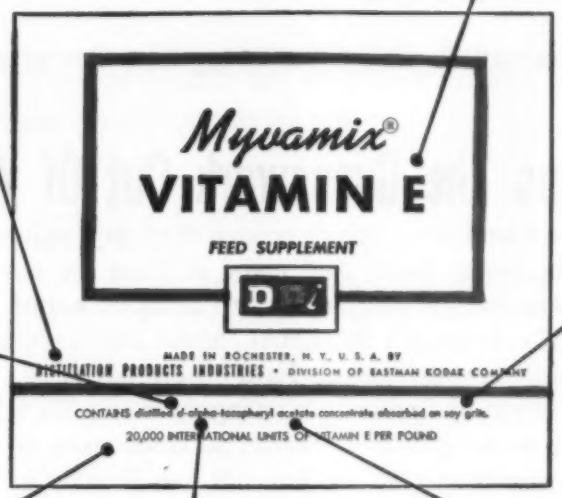
For information or a quotation on *Myvamix Vitamin E Feed Supplement*, write ***Distillation Products Industries,*** Rochester 3, N. Y. Sales offices: New York and Chicago • Charles Albert Smith Limited, Montreal and Toronto • Or, contact the distributor nearest you.

Vitamin E is considered by many authorities to be an essential part of a nutritionally complete diet for chickens, turkeys, dogs, and other animals. We will be happy to send literature references on request.

The "d" means the vitamin E in *Myvamix Vitamin E Feed Supplement* is the same stereoisomer that appears in nature. 1 milligram of *d*-alpha-tocopheryl acetate is equivalent to 1.36 International Units of Vitamin E.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CONTAINS distilled d-alpha-tocopheryl acetate concentrate absorbed on soy grits.
20,000 INTERNATIONAL UNITS OF VITAMIN E PER POUND

The vitamin E in *Myvamix* is on a dry, non-dusting soy grits base. We use grits instead of meal because they have less fiber, less moisture, more protein, more uniform particle size, and are dusted to remove hulls and powder. All this means a higher quality product, one that's as easy to handle as anything in your mill.

With *Myvamix*, you know exactly how much vitamin E is in your feed. There's a sure 20,000 International Units of Vitamin E per pound. The cost is only a few dimes per ton of feed.

There are at least seven tocopherols which have some vitamin E activity. The most effective biologically is "alpha." That's what is in *Myvamix Vitamin E Feed Supplement*. (Only 10 to 15% of the tocopherols in corn is "alpha"—the rest is "gamma," one of the least effective of all.)

The "acetate" means that the vitamin E in *Myvamix* is really stable. Tests show no loss of potency even after storage in finished feeds for six months at 100 F. The full potency you put in the feed is there when the feed is fed.

Give your feeds new profit benefits

Poultry Wormer gets all 3—tapeworms,

PROVIDES THESE BENEFITS FOR GROWERS

- **Effective—Removes up to 100% of large roundworms, cecal worms and all damaging species of tapeworms.**
- **Palatable—Birds don't back away from medicated feed.**
- **Sure dosage—1 lb. of Wormal in 100 lb. of feed treats 250 turkeys or chickens of any age.**
- **Economical—Only one extra egg more than pays for two treatments.**

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Growers are having trouble enough these days without trying to make a profit feeding wormy birds. And many of them are tired of using "hit-or-miss" wormers that get only one or two kinds of worms. No doubt they've heard about Dr. Salsbury's WORMAL, about how it protects birds and profits from the hidden worm hazard. Hard-hitting advertising in farm papers, poultry publications, and on radio is telling them how WORMAL takes the guesswork out of worming, how it removes all three major types of poultry worms that cause economic loss. All these ads say, directly or indirectly, "Ask for feed containing WORMAL." That's why your feeds should contain WORMAL—so you can cash in on the growing demand for feeds that contain a *complete* wormer. Mix WORMAL in your feeds for chickens and turkeys—it gives your feeds profitable extras you can sell!

NATIONWIDE SERVICE

with WORMAL, the Complete

large roundworms, cecal worms

PROVIDES THESE BENEFITS FOR YOU

- Customers are quick to recognize that your complete and convenient worming program does the best job of removing worms.
- Worm-free birds utilize feed more efficiently—your feeds gain wider recognition and acceptance.
- Granulated WORMAL is the easiest wormer to handle, to mix, and to inventory.
- All of the grower benefits add up to more satisfied customers. And this means more feed sales for you.

Plus Extra Services

Because of your desire to provide superior feeds for your customers, you may wish more detailed information about Dr. Salsbury's WORMAL, the only *complete* poultry wormer on the market today. Please write, wire, or phone for either one (or both) of the two booklets shown here—Feed Manufacturer's Guide No. 17 and "Here's how to make and merchandise your own worming feed for poultry." Or, you may wish to talk personally with a Dr. Salsbury representative and ask him about using WORMAL in your feeds for chickens and turkeys. Either way, be sure to give your feed the many profit benefits that only WORMAL can provide.

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PROTAMONE — STIMULAC
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INQUIRIES APPRECIATED

additional customers and increased sales.

Credit Program

While the owners of the Fairmont Farm Store do extend credit to customers with approved credit, and also help them to obtain bank or other financing when needed, they still stress the importance of buying for cash and meeting credit payments when due. Some signs carrying the credit message are posted about the store. Copy on one sign states: "Credit Policy. 30 days to approved customers. Over 60 days past due—no more credit."

Another credit sign says, "Fairmont Farm Store terms of sale. Cash or 30 days credit to approved customers. Over the 30 days past due. No more credit and collection effort started."

"Actually our credit accounts are in good shape," says Mr. Welchlin, "because we keep watching accounts that get overdue and we lose no time in trying to collect them. Today the worthy farmer can usually get a production loan from his bank or some other source. There is no need for the feed dealer to keep on being a banker for the farmer, and most farmers don't expect this, either. In these days of bigger feeding operations, no feed dealer can afford to finance too many big accounts. That's a job for the banks, and that's where we steer that kind of business."

CONTROL PANEL—Martin Welchlin, one of the owners of the Fairmont (Minn.) Farm Store, is shown operating the control panel of the firm's new bulk station. Bins are numbered opposite each button. Types of feed are shown on tags in slots.

In addition to their feed activities, these feed merchants also sell dry and liquid fertilizer. This business attains considerable volume in spring and fall. Fall plowdown in this area has increased in recent years.

Fairmont Farm Service also has a jeep spray outfit for weed spraying and applying of aldrin for root rot, etc. During the summer months this jeep is kept busy on various types of spray jobs on farms, on public lands, cemeteries, etc.

"We've got a business that keeps us busy most months of the year," states Mr. Welchlin, "and that's the way we want to have things operate. Our new bulk service is going to expand during the coming year, and the new accounts we get will help the other departments of our business."

The firm has a large molasses storage tank in its farm store with a meter attached. Molasses is sold to other mixers in the area who come and get it at the farm store. This service has helped the farm store pay for its molasses tank installation.

BULK DELIVERY — The Fairmont (Minn.) Farm Store's new bulk truck is shown delivering feed to a farmer. The feed comes directly from the firm's new bulk plant.

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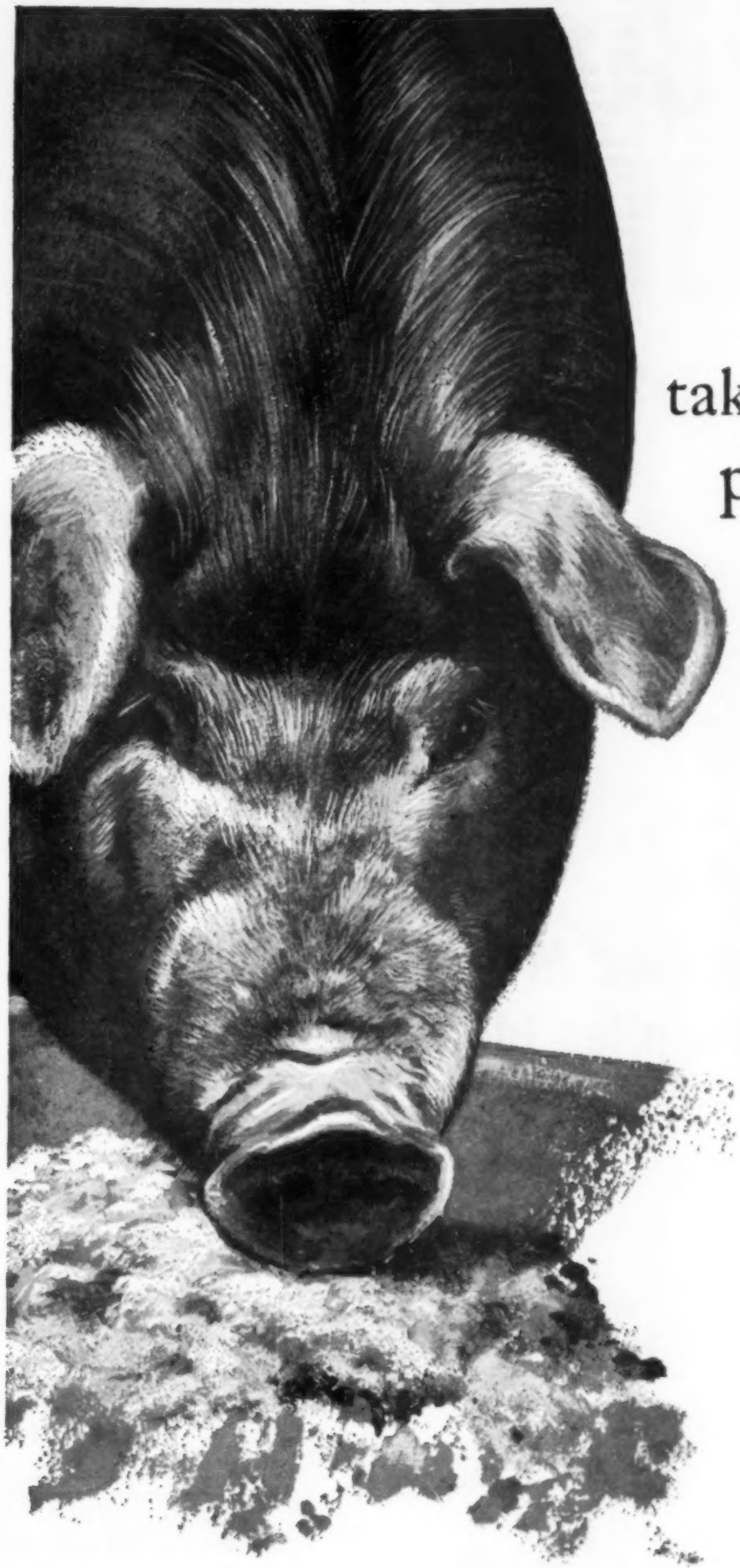

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Report Outlines Nebraska's Future in Egg Production; Notes Chick Sales Up

LINCOLN, NEB. — A number of reasons why Nebraska, and the Midwest generally, will be able to remain competitive in egg production were outlined in a recent report from the Nebraska Poultry Improvement Assn., Inc., Lincoln.

The report also noted that in spite of low egg prices and generally unfavorable conditions during the 1959 hatching season, Nebraska hatcheries sold more chicks in 1959 than in the previous year.

Included was a table showing the number of chicks sold in seven midwestern states in 1958 and 1959. Figures reported in the table were computed by adding the report published by the Nebraska state-federal division of agricultural statistics for the month of May to the January-through-April report published by the U.S. Department of Agriculture in "Hatchery Production," May 15. The table is as follows:

State	1958 Jan. thru May 1000's	1959 Jan. thru May 1000's	% Increase or Decrease
Kansas	15,206	12,960	—15.0
Minnesota	43,125	38,422	—11.0
Iowa	60,745	53,125	—12.5
Missouri	53,268	48,477	— 9.0
No. Dak.	3,688	3,436	— 7.0
So. Dak.	13,758	13,709	— 0.4
Nebraska	19,176	19,859	+ 3.6
Total North Central Region	208,966	189,988	— 9.1

In commenting on the status of Nebraska and the Midwest generally in the egg production competition picture, the association report stated that Nebraska has a number of hatcherymen, poultry prefabricated housing manufacturers, feed dealers and other allied industry leaders who have confidence in the future of the egg industry.

"Expansion has occurred because of conservative, well-planned programs. In many cases, diversified farmers have increased their flock size from 250 to 1,000-1,500 birds. In very few instances has expansion been greater than that needed to utilize surplus farm labor. In general, expansion has occurred in regions or clusters near a hatchery or feed dealer who has a contract to provide quality eggs for a market," according to the report.

"A well planned quality program, developed in a community, on a diversified farm will be able to compete with integrated programs any place in the nation."

Other "arguments in favor of midwestern quality egg production" were listed as follows:

"1. Low feed costs. Low cost farm grains blended on the farm, or by nearby stationary mixers, give producers in this area the lowest feed cost of any region in the U.S. Currently producers report feed costs from $55 to $65 per ton. Converted to cents per dozen, this advantage in feed cost compared to other regions, varies from 2¢ to 10¢ doz.

"2. Low cost labor. The laying projects on most diversified farms are designed to utilize surplus family labor. Income is based on the combined income from crops, cattle, hogs, etc.

"3. Low cost builders and equipment. Many farms have existing facilities that have been converted to provide inexpensive housing—less in many instances than construction in the warmer regions.

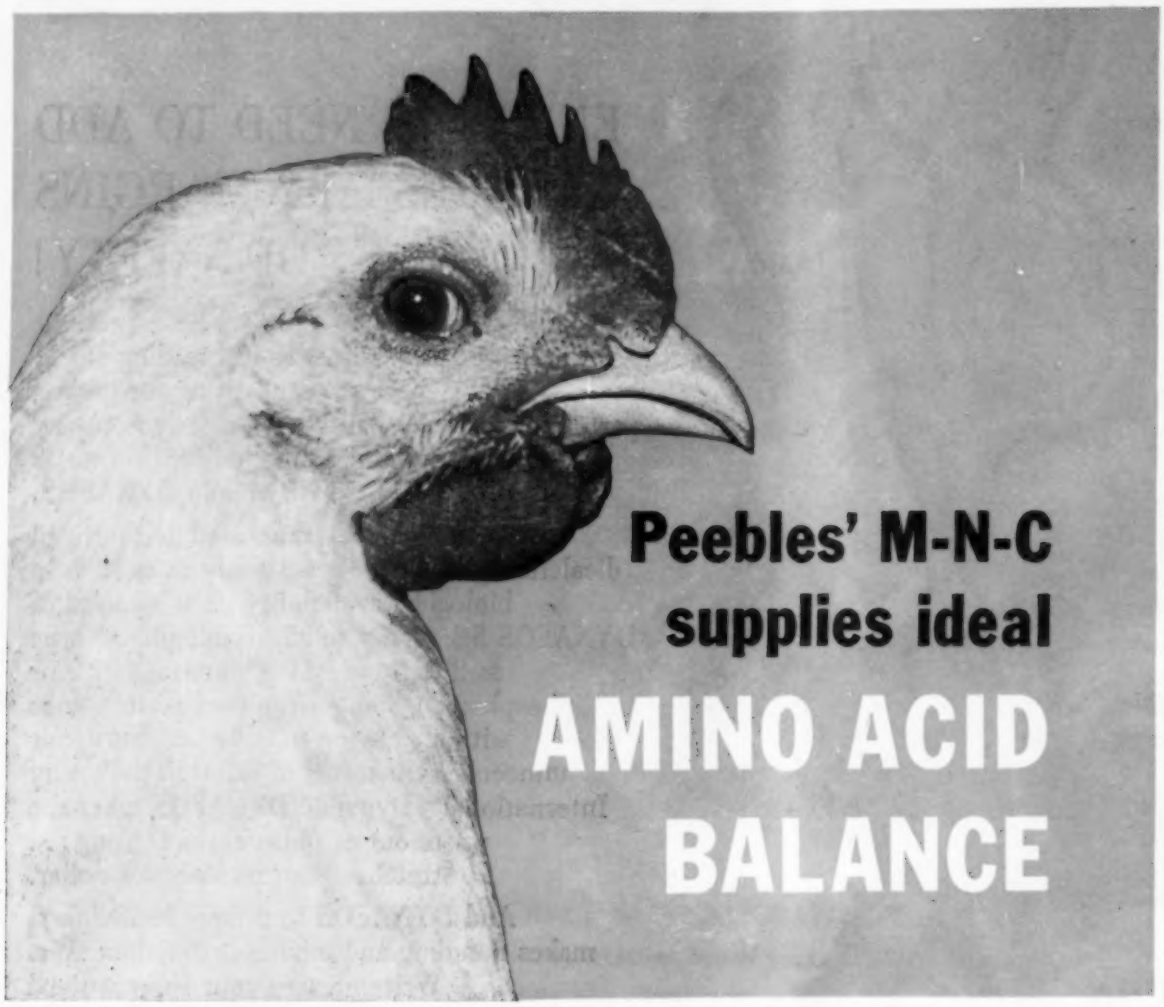
"4. Markets. Due to previous contacts, midwestern producers have established themselves in many of the key markets throughout the U.S. Other regions, specifically the South, have shown marked increases in production, mainly because of price advantage. As long as this region is a deficit area, nearby producers can sell their eggs at midwestern prices plus transportation. When and if the South becomes a surplus area, it not only will need to develop new markets, but will be forced to sell at the midwestern prices, less transportation to the markets.

"Since the Midwest is centrally located, it is in a better position to serve deficit areas. As transportation facilities improve through the development of transcontinental highways, faster trucks with improved refrigeration facilities, the Midwest will have an even greater advantage."

The report included cost calculations on egg production, which appeared in the April issue of "Maine Timely Topics," and these calculations were applied to Nebraska conditions, as follows:

Cash Costs:	Per Layer House	Per Doz. Eggs
Feed @ $3 per cwt. .	$2.72	15.54c
Supplies & Misc.	.40	2.24c
Taxes and Insurance .	.17	.95c
Total	$3.29	18.73c
Depreciation on Birds:		
Cash cost pullets 1.35 minus salvage .35=	$1.00	5.60c
Depreciation Buildings and Equipment:		
Buildings 3.75@ 5%=	$ .19	1.06c
Equipment .82@20%=	$ .16	.90c
Total	$ .35	1.96c
Interest on Investment: Bldgs. & Equip. 4.57 + Bird 1.35=$5.92 @5%=	$ .30	1.68c
Total cost (Labor omitted) .	$4.94	27.97c

"Many Nebraska producers will be able to produce eggs for even less. Many operators will have better feed conversion. Housing costs will be less, therefore lower interest and depreciation costs," it was stated in the report.



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Here's the best way to step up the efficiency of your broiler feeds. Incorporate Peebles' M-N-C (partially delactosed whey-product). For M-N-C gives you the vital amino acid balance that makes protein function with maximum effectiveness. M-N-C offers you the perfect, low cost source of the 12 essential amino acids.

In addition, M-N-C is concentrated to give you, pound for pound, 50% more non-lactose nutrients. Just 2% M-N-C supplies the same amount of Whey factor and other growth-promoting elements as 3% whole dried whey.

Peebles' exclusive spray-dried process assures uniform high quality. M-N-C's smooth, even texture provides uniform color and even distribution in mixed feeds.

Find out how M-N-C can answer your amino acid requirements and give your feeds added nutritional value. Write or wire today for complete information.

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The SWISHER FEED SERVICE plan to feed mills is the *modern* approach because it puts you in the *manufacturing* business!

THESE PROFIT POINTS MAKE COMMON SENSE!

PROFIT POINT 1 — You manufacture feeds *from one package* which contains all the animal-source protein, vitamins, unidentified growth factors, antibiotics, and minerals. All you do is add the grain and soybean meal locally.

PROFIT POINT 2 — By manufacturing feed under the Swisher Feed Service program you buy your own corn and soybean meal at greatly reduced costs. You save on transportation costs, handling charges and the mark-up of the middle man on the soybean meal and grain—the two major items used in feed today! This means that your profits increase because you're eliminating unnecessary charges.

PROFIT POINT 3 — You *sell* more feeds because you have a big price advantage to give to your customers. You can do this because you are the manufacturer and your total costs are LESS.

PROFIT POINT 4 — You make a FIRST LINE of feeds, the best that money can make, scientifically developed, researched, and tested.

PROFIT POINT 5 — SWISHER supplies all the formulas for a COMPLETE line of feeds, a prestige brand name, bags, registration, personal sales service, advertising program—in short, all the things you need to be a high-powered *manufacturer* and direct seller of feeds.

PROFIT POINT 6 — You sell feeds rich in highly digestible animal protein yet lower in costs, superior feeds that are "proved by performance"—that have been widely accepted by big commercial producers, men who are best able to rate the efficiency of feeds! You open these doors when you're with SWISHER!

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☐ Please send more details on your Feed Service plan.
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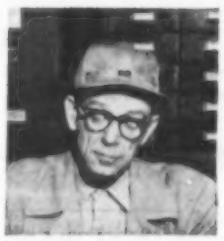
LOOK at THE BENEFITS YOU GET:

Harry Bahler, owner of Bahler Feed Service at Remington, Indiana, enthusiastically says this about SWISHER Feed Service:

"Since I have been on the SWISHER Feed Service Program, I have made a larger margin of profit and still have been very competitive in price. And in addition, I have been able to increase my tonnage by being able to supply bulk feeds which I manufacture *locally.* My customers are extremely happy in being able to obtain feeds that are rich in meat protein and are always fresh. I recommend to every progressive feed man that he investigate SWISHER Feed Service. It is based on common sense reasoning and gives a local feed mill *all* the advantages of a big city manufacturer of livestock and poultry feeds and concentrates."



SWISHER FEED SERVICE

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TABLE 4: Average Composition of Corn and Grain Sorghum Seed Parts*

FIGURE 4: Nonprotein Nitrogen Constituents of Corn

FEED UTILIZATION RESEARCH

"Research has made important contributions toward the utilization of cereal grains and oilseed meals in feed . . . and has been the foundation for achievements in quality maintenance and improvement and development of new processes and products."

By L. L. McKinney
Northern Regional Research Laboratory

EDITOR'S NOTE: This article, from a presentation by the author at the seventh annual meeting of the American Association of Feed Microscopists, Quincy, Ill., this spring, describes investigations of feed commodities assigned to the Northern Regional Research Laboratory at Peoria, Ill. This is a laboratory of the northern utilization research and development division, Agricultural Research Service, U.S. Department of Agriculture.

The author, L. L. McKinney, assistant director of the laboratory, reviews feed utilization research on proximate composition and structure, proteins and amino acids, vitamins and minor constituents, fermentative production of antibiotics and processing.

Numbers in parentheses denote references listed at the end of the article. Reprints of these articles can be obtained as noted just above the reference list.

Feed commodities assigned to the Northern Regional Research Laboratory for investigation are the cereal grains—corn, sorghum, oats and barley—and soybean and linseed oil meals. Emphasis has been and is being placed on utilization research directed toward new and expanded industrial outlets for these commodities. However, investigations important to their feed uses were initiated in 1941, soon after the laboratory was built, and have continued ever since.

Table 1 shows the current feed, food, industrial and export volumes for feed grains. Over 90% of the domestic use of these grains are in feeds. It is, therefore, fitting that research to improve the feeding value of these commodities be part of any utilization research program. More efficient feeds mean more efficient production of livestock and poultry, hence more plentiful meat and a higher standard of living. The 5% used for food includes beverage alcohols. Because the greatest opportunity for increasing outlets lies in the area of industrial applications, emphasis is on this type of utilization research.

TABLE 1: Utilization of Feed Grains for Crop Year 1957-58*

(Million tons)

Grain	Feed	Food	Industrial	Exports
Corn	72.0	4.6	3.0	5.1
Grain sorghum	7.3	0.14	0.14	1.62
Oats	17.4	0.59	...	0.41
Barley	5.2	0.13	2.8	2.2
Rye	2.2	0.13	0.12	0.10
Totals	104.1	5.59	5.26	9.43
Percentage	83.7	4.5	4.2	7.6
Domestic use, %	90.5	4.9	4.6	...

*Disregarding seed. USDA, AMS, Feed Situation.

The production of feed grains is compared in Figure 1 with total use since 1946. The excess production over use averaged 7.8% during the period 1952-58. The problem of utilization research is to find new and expanded outlets for this production in excess of needs.

The importance that soybean oil meal has attained as a source of high-protein concentrate over the past 20 years is shown in Figure 2; this meal now supplies nearly 60% of the total. To date, the annual production of soybean oil meal has been used each year and no surplus problem exists. Less than 3% goes into industrial applications.

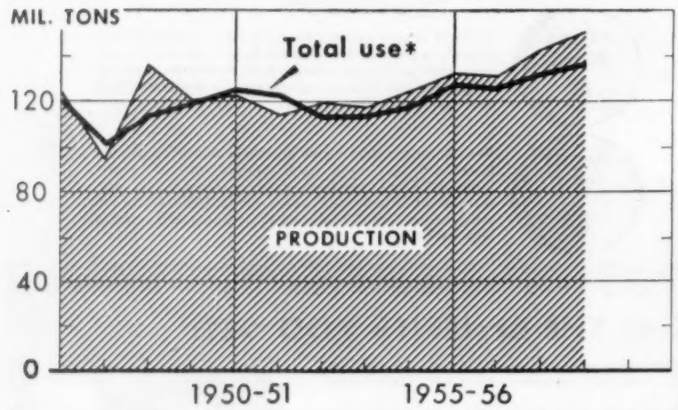
This report reviews our feed utilization research on proximate composition and structure, proteins and amino acids, vitamins and minor constituents, fermentative production of antibiotics and processing. Trends in feed utilization and their effect on future research are also considered.

TABLE 2: Mean Proximate Composition of Feed Grains and Oilseed Meals*

Feed	Crude Protein %	Ether Extract %	Crude Fiber %	Nitrogen Free Extract %	Ash %
Dent corn	10.4	4.5	2.4	81.2	1.5
Grain sorghum	12.5	3.4	2.7	79.2	2.2
Oats	13.3	5.1	12.0	65.5	4.1
Barley	13.1	2.1	6.0	75.7	3.1
Soybean oil meal†	50.6	1.7	6.5	34.6	6.5
Linseed oil meal†	40.0	3.2	9.6	40.0	6.2
Cottonseed oil meal	49.0	8.4	9.5	27.0	6.0

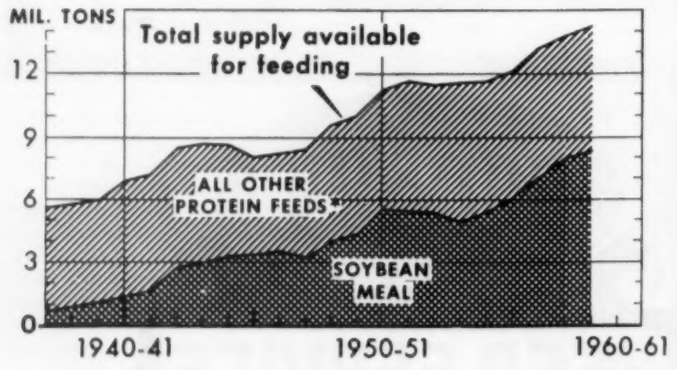
*Dry basis. †Solvent-extracted.

FIGURE 1: Feed Grain Output Exceeds Use Each Year Since 1952



*Marketing year beginning Oct. 1 for corn and sorghum grain, July 1 for oats and barley. 1958 based on Sept. 1 indications.

FIGURE 2: Importance Attained by Soybean Oil Meal as High-Protein Concentrate Source



Year beginning October.

*Other oilseed meals; animal, marine and grain protein feeds; in terms of soybean meal equivalent. 1958-59 based on September indications.

Proximate Composition, Structure

Compilation of the most reliable available data on the composition of cereal grains and forages has been achieved by a recent five-year study carried out under contract with the National Research Council. This book (1) provides in one source the most complete data now available on nutritionally important constituents and is useful in formulating feeds for the most efficient and economic production of livestock and poultry. Table 2 shows the mean proximate composition of feed grains taken from this book and also data for oilseed meals reported previously (2). The National Research Council publication (1) reports minimum and maximum as well as mean values for each component.

Compositional studies have been made by the Northern Laboratory on a number of varieties of both the whole seeds and the seed parts of corn (3) and grain sorghum (4). The ranges in percentage of seed parts of these two grains are compared in Table 3. Variations in percentages of seed parts and of composition are important criteria for genetic studies directed toward breeding for seeds of desired characteristics. The average composition obtained in our studies of corn, grain sorghum and their seed parts is shown in Table 4. The similarity in composition of these two grains is apparent. This type of data is useful for evaluating milling possibilities of grains. A comprehensive

TABLE 3: Seed Parts of Corn and Grain Sorghum Compared*

(Range in percent, dry basis)

Seed Part	Corn	Grain Sorghum
Endosperm	79.7-83.5	80.0-84.6
Germ	10.2-14.1	7.8-12.1
Bran	5.2- 7.3†	7.3- 9.3

*Hand separated. †Includes tip-cap.

FIGURE 3: Comparison of Ungelatinized Starch Granules

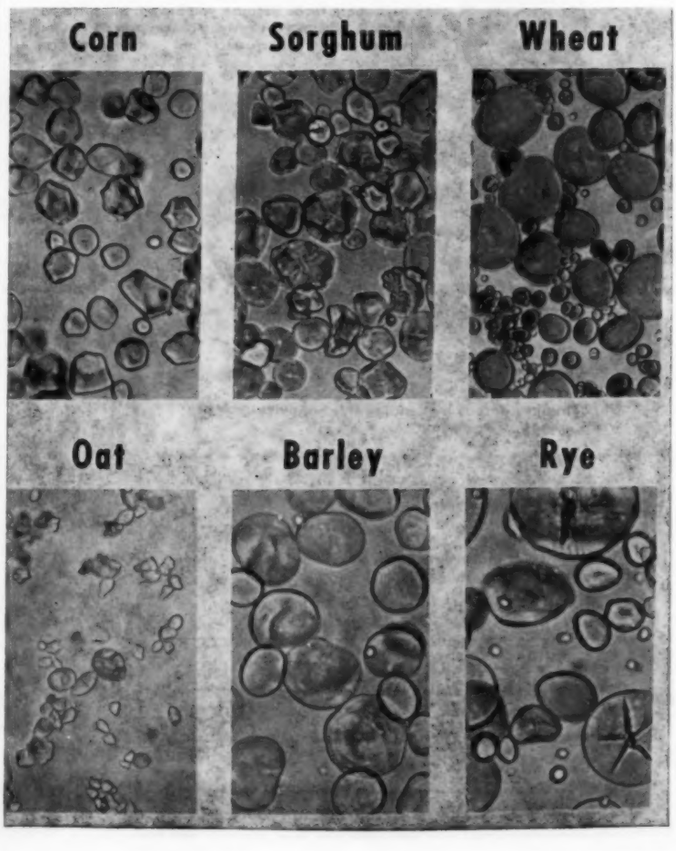


TABLE 4: Average Composition of Corn and Grain Sorghum Seed Parts*

Seed Part	Starch %	Protein %	Oil† %	Ash %
Whole corn	71.5	10.3	4.8	1.44
Endosperm	86.4	9.4	0.8	0.31
Germ	8.2	18.8	34.5	10.1
Bran	7.3	3.7	1.0	8.4
Grain sorghum	73.8	12.3	3.9	1.65
Endosperm	82.5	12.3	0.6	0.37
Germ	13.4	18.9	28.1	10.4
Bran	34.6	6.7	4.9	2.02

*Hand separated; dry basis. †Sorghum includes wax.

TABLE 5: Critical Essential Amino Acid Content of Grains

(Range in percent, dry basis)

Grain	Lysine	Methionine-cysteine*	Tryptophan	Histidine
Dent corn	0.1-0.4	0.2-0.6	0.1†	0.1-0.4
Grain sorghum	0.1-0.4	0.1-0.4	0.1-0.2	0.2-0.4
Oats	0.2-0.7	0.2-1.1	0.0-0.3	0.1-0.6
Barley	0.2-1.0	0.2-0.6	0.1-0.3	0.2-0.4

*Sum of high and low values reported. †Mean value only.

literature review of the chemical composition of the mature corn kernel was published in 1952 (5). Variations as well as average contents of different carbohydrates, nitrogen compounds and minor constituents were considered.

The Peoria laboratory has carried out extensive histological and microscopic studies on corn to furnish information for applied milling studies and developments. Techniques have been published for preparation of serial sections of corn and wheat kernels (6) and for micromanipulation of gelatinized starch granules (7). A series of articles described the gross anatomy and the detailed microscopic structure of the pericarp, seedcoat, hilar layer, endosperm and germ of dent corn (8). The microscopic characteristics of starches have been described (9). Differences in starch structure can be used by feed microscopists in the identification and quantitative estimation of cereal grain constituents in feeds. The photomicrographs shown in Figure 3 compare granules of ungelatinized corn, grain sorghum, wheat, oat, barley and rye starch.

Attention has been given to the cell layers in corn where the germ and endosperm meet to provide information basic to developing more efficient methods of degerminating corn (10). The scutellar epithelial cells that surround the germ were found to be composed of cellulose and pentosans, with the pentosans concentrated at the cell tips abutting the cementing layer which separates the germ from the endosperm. Treatment with the enzyme, pentosanase, allows ready separation of the germ from the endosperm along the line defined by the tips of the scutellar epithelial cells. This discovery provides groundwork for a new and direct attack on the problem of corn degermination.

Proteins and Amino Acids

The problem of formulating an efficient diet for monogastric animals involves balancing the essential amino acid requirement of the animal with the desired energy content of the diet, and, of course, adding the required vitamins and minerals. Animals eat to satisfy their energy requirements. Hence, the more energy the diet contains, the more essentials in the way of essential amino acids and required vitamins that must be added to avoid deficiencies. The feed mixer is faced with the problem of blending the most economical ingredients to produce rations containing all the essentials needed to balance energy content. Unfortunately, none of the individual vegetable proteins furnish a balanced set of essential amino acids and required vitamins. Furthermore, requirements differ for different animals, and even for the same animal at different ages.

Studies by Northern Laboratory chemists have pointed out the need for more research on composition of feed commodities, especially soybean oil meal (11), to furnish the feed manufacturer the necessary information to improve his feeds further—feeds that are perhaps already the most efficient in the world. Once the chemist finds the amino acid content of a protein, the nutritionist still has to determine what percentage of each essential amino acid supplied is utilized by each type of animal at different stages of growth and maturity. Care must be taken in formulating feeds to avoid deficiencies of lysine, methionine-cysteine, tryptophan and histidine, because adequate amounts of these are often lacking in vegetable protein sources. Table 5 shows the ranges of these essential amino acids reported in cereal grains (1). A three- to fivefold difference is noted between the high and low values. Whether these differences are the result of analytical errors, varietal variations, environmental conditions or a combination of these is yet to be determined. Until recently, analytical methods were laborious, time consuming, and not always dependable. This explains the lack of sufficient analyses to establish the cause of variations. New and rapid methods of analyses by chromatography are expected to provide some of the answers to these questions. The Northern Laboratory is applying these new analytical techniques (12), and complete amino acid analyses of a protein can now be obtained in a matter of hours.

More than 500 bacteria, yeasts and molds have been surveyed in fundamental studies to explore the possibilities of growing microorganisms on grain substrates to produce feed proteins rich in lysine, methionine and tryptophan (13, 14). So far, the dried cultures from grain substrates have produced feed supplements with amino acid compositions comparable to those of soybean oil meal, i.e., 3.5% lysine, whereas about 10% is desired. Artificial substrates have given up to twice the percentages obtained with grain substrates. Results of these survey studies are shown in Table 6 where the values for soybean oil meal are included for comparative purposes.

Soybeans contain a hemagglutinating protein that is similar in some respects to the toxic protein, ricin, in castor beans. Fortunately, it is heat-labile and is destroyed by the toasting process used in producing soybean oil meal for feed. This protein has been isolated, and its chemical and biological properties are being studied (15, 16).

Studies are also underway on the proteins of soybeans and corn to elucidate their fundamental chemical, physical and biological properties. This work includes studies on the two trypsin inhibitors now known to be in soybeans.

TABLE 6: Microbial Proteins for Feed

(Dried cultures, 50% protein; gm. per 16 gm. N)

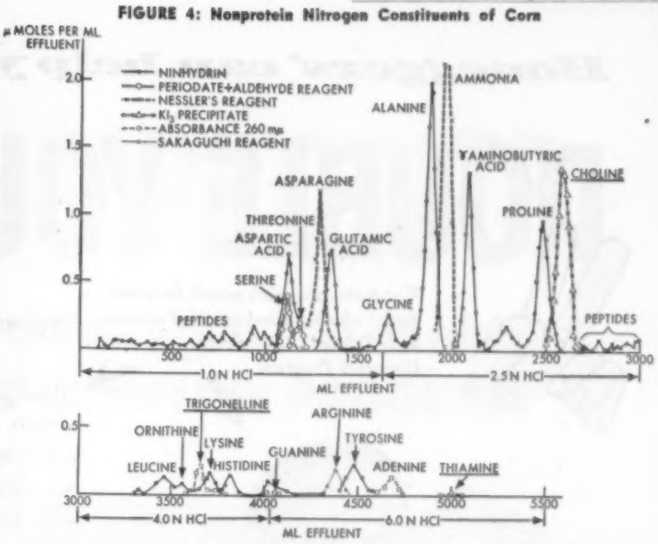
	Lysine			Methionine			Tryptophan		
	High	Low	Av.	High	Low	Av.	High	Low	Av.
86 Bacteria	13.5	2.6	6.5	4.5	0.7	1.8	0.8	0.1	0.3
150 Molds	9.2	2.4	5.5	2.6	0.6	1.3	1.5	0.1	0.8
271 Yeasts	10.2	3.8	7.2	2.6	0.4	1.2	1.6	0.3	0.8
Soybean meal*			6.2			1.4			1.3

*Shown for comparison.

TABLE 7: Vitamin Contents of Feed Grains Compared With Requirements

	Mg./lb., mean values				NRC Requirements Mg./lb. feed	
Vitamin	Corn	Sorghum	Oats	Barley	Swine	Poultry
Thiamine (B_1)	2.0	2.1	3.2	2.6	0.5	0.8-(?)
Riboflavin (B_2)	0.6	0.7	0.8	1.0	1.0-1.2	0.8 -1.8
Pyridoxine (B_6)	2.6	2.7	0.6	1.5	0.6	1.2 -1.3
Niacin	11.6	22.0	8.1	29.3	5-8	12-25
Pantothenic acid	3.2	5.7	6.6	3.3	4.5-5	2.1 -5
Carotene (A)	1.8	0.6	0.0	0.2	0.7-3.0	0.06-0.24
Folic acid	0.1	0.1	0.15	0.3	+(?)	0.11-0.4
Biotin	0.04	0.13	0.15	0.08	+(?)	0.04-(?)
α-Tocopherol (E)	1.6	...	3.0	3.1	None	+

FIGURE 4: Nonprotein Nitrogen Constituents of Corn



Indian workers have alleged that soybean meal contains an antithiamine factor that possibly is not destroyed by the toasting process. Studies at the Northern Laboratory have shown that the alleged antithiamine factor is an analytical artifact, thus freeing soybeans of such a stigma. Analyses by Peoria scientists further showed that 40% of vitamin B_1 is present as free thiamine and 60% as cocarboxylase. A natural phosphatase is present that rapidly hydrolyzes cocarboxylase to free thiamine when the meal is slurried in water. Oriental millet (Eleusine coracana), however, was found to contain a heat-stable thiamine-destroying factor as reported by the Indian workers (19).

To explore the feasibility of sprouting soybeans for use in high-energy, high-protein broiler feeds, the compositional changes in soybeans during sprouting have been investigated (20). During the first three days, about 1.5% of the dry matter was lost. Nonprotein nitrogen increased from 3 to 6% of the total nitrogen, with no change in the petroleum ether extractables and with a decrease in free fatty acids. The optimum sprouting time for increase in nutritional essentials appeared to be two days.

Grain sorghum is deficient in carotenoid pigments when compared with yellow corn. These yellow-orange pigments are important in poultry feeds to impart the yellow color to egg yolk and to the skin of broilers and they are desired in dairy feed to give yellow butter. Methods have been developed for determining these carotenoid pigments in grain sorghum

(Turn to page 48)

Vitamins

Vitamins are essential constituents of feeds. To make full use of the natural vitamins in feed grains, it is necessary to have accurate data not only on the mean values but on variations within varieties and on variations caused by environment. The problem of more efficient use of natural vitamins present in feeds and of increasing the supply has been subject to the threefold attack at the Northern Laboratory: Analyses of vitamins in grain varieties and feedstuffs, increasing vitamin content by cooperative research with geneticists and development of processes for the microbial production of vitamin supplements from cereal grains.

Mean values for the vitamin contents of feed grains are listed in Table 7, along with the requirements for swine and poultry as reported by the National Research Council. Further data on the range of vitamin contents found in different samples can be obtained by consulting original papers (1, 4, 5, 17). From the mean values, cereal grains appear to offer sufficient quantities of B vitamins to meet requirements. A possible exception is riboflavin (vitamin B_2). Feed manufacturers and users are concerned with the minimum vitamin contents to avoid deficiencies in lots of grain containing less than the mean values (1).

Ground corncobs have been used for cattle feed as roughage and found to possess about two thirds the nutritive value of shelled corn. At the request of feeders and nutritionists, the B vitamins of cobs from 25 varieties of corn, grown in six states and over four crop years, were determined (18). A considerable range in the amount of each vitamin was noted among the samples tested. There was no relationship between the content of different vitamins in a single variety of cobs. Riboflavin in cobs slightly exceeds that in corn, pantothenic acid is approximately equal, whereas biotin, niacin and pyridoxine are less than in corn.

TABLE 8: Urease Activity in Soybean Seed Parts*

	Variety	
Seed Part	Lincoln	Harosoy
Whole meal	6.0	7.4
Cotyledon	6.1	7.6
Germ	11.2	13.3
Hull	0.1	0.2

*Defatted with hexane; values=ml. of 0.1 N ammonia liberated per 20-mg. sample.

TABLE 9: Reported Lysine, Methionine and Tryptophan Content of Seed Proteins

	Amino Acid in Protein, Percent					
	Lysine		Methionine		Trypto-phan	
	High	Low	High	Low	High	Low
New plant seeds 25 families, 89 species	11.4	1.4	5.5	0.2	2.3	0.2
Other sources*						
Corn	2.7		1.8		0.7	
Soybean	6.6		1.1		1.2	
Animal requirements†						
Swine	5.5		3.3		0.8	
Chick	4.5		2.3		1.0	

*Average values. †NRC recommendations.

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and corn (21). These methods have been employed in the analyses of samples supplied by geneticists of the crops research division, Agricultural Research Service, in cooperative research for developing varieties with higher carotenoid content. Yellow-endosperm sorghum crosses have been found containing up to 9 ppm. of carotenoids compared with yellow corn which contains 22 ppm.; progress is indicated because previous sorghum varieties contained only 1.5 ppm.

Other genetic studies have been carried out in cooperation with the Iowa Agricultural Experiment Station to increase the riboflavin and niacin contents of oat varieties. As a result of this work, the two vitamins are now under genetic control, pointing the way for increasing the feeding value of oats (22, 23).

Research on the fermentative production of vitamins, again using grain products for substrates, is an important area of investigation at the Northern Laboratory. Over half of the 5.6 million dollars worth of domestic riboflavin is now produced by the organism and process developed at the Laboratory; 62% of its production is used in feeds. A yeast, Ashbya gossypii which is a pathogen for the cotton plant, is grown on corn steep liquor and corn sugar to produce riboflavin (24). Another development was the first commercial process for producing vitamin B_{12} (animal protein factor) by fermentation of grain products with Streptomyces olivaceus (25). More recently, a process was developed for producing beta-carotene to supply vitamin A in feeds (26). In this process, plus and minus strains of the Choanephoraceae, particularly Blakeslea trispora, are grown together in a grain-based medium and upon filtering, bright orange solids are obtained. The crude product, containing up to 0.8% beta-carotene, may be used as a feed supplement.

Minor Constituents

Minor constituents of feeds need further elucidation to assess their importance on feed value. In the case of deleterious substances, processes need to be devised to destroy them, or they need to be eliminated by genetic means. Physiologically active constituents that are important include estrogenic compounds such as isoflavones, saponins known to cause hemorrhages in chicks and to be involved in bloat, trypsin inhibitors, toxic proteins and amino acids in the nonprotein nitrogen fractions (11).

The nonprotein nitrogen constituents of corn are being studied. A "bound" form of niacin that may be involved in the pallagragenic activity of corn has been isolated. Over 25 other compounds have been isolated and identified. Amino acids account for 65% of the nonprotein nitrogen in corn extracts, indicating the protein value of the nonprotein fraction. The chromatographic separation of these constituents is shown in Figure 4 (27).

The water- and alcohol-soluble organic acids of barley are likewise under investigation. Total organic acids compose about 0.3% of barley. To date, acetic, fumaric, pyruvic, succinic, malic, citric, isocitric and malonic acids have been isolated and identified. Others have been isolated but are not yet identified.

Tall fescue is known to cause a condition in cattle referred to as "fescue foot." Studies are underway to isolate this toxic factor from toxic fescue hay. No chemical test has been found for the toxic principle, and laboratory animals do not respond to the toxicity. Consequently, fractionation must be carried out on a pilot-plant scale to obtain sufficient amounts for feeding to calves. Isolation of the toxic principle is there-

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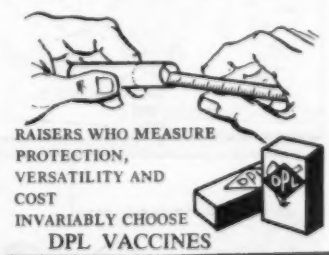

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fore expected to be a slow and tedious operation.

Studies on the minor constituents of soybean oil meal are underway. Because phytate possibly affects feeding value of the meal, it has been the subject of investigation (28). The composition of soybean phosphatides has been studied (29). Glucosamine, an unusual amino sugar for plant constituents, has been found in the phospholipide fraction (30). Part of the phosphatides are extracted from the meal on removal of the oil; these are the products that have been studied. Little is known of the phospholipides remaining in the feed meal.

Studies have been carried out on the hemicelluloses of corn hulls (31, 32), and work is underway on oat gums.

Production of Antibiotics

The antibiotics industry was initiated by the discovery at the Northern Laboratory of a commercial method for the mass production of penicillin (33, 34). Penicillin was first discovered in England by Fleming in 1928. In 1939, English workers found it to be remarkably effective in the treatment of human infections. Unable to promote further laboratory work, let alone large-scale production in their war-torn country, English scientists brought their problem to Peoria in June, 1941. In a few months the yield was greatly increased, demonstrating the practicability of commercial production. Largely instrumental in bringing about the increased yield was the use of corn steep liquor as a substrate, and addition of milk sugar to the medium gave an additional increase. Out of more than 200 strains tested, a penicillin mold growing on a Peoria cantaloupe proved to be superior for producing the antibiotic. Variants of this mold are still used today. The development of an economical submerged fermentation process by the Northern Laboratory was a major contribution leading to antibiotics becoming available in large quantities. In 1957, antibiotic production amounted to over 3 million pounds, valued at $355 million. One fourth of the total volume went into feeds.

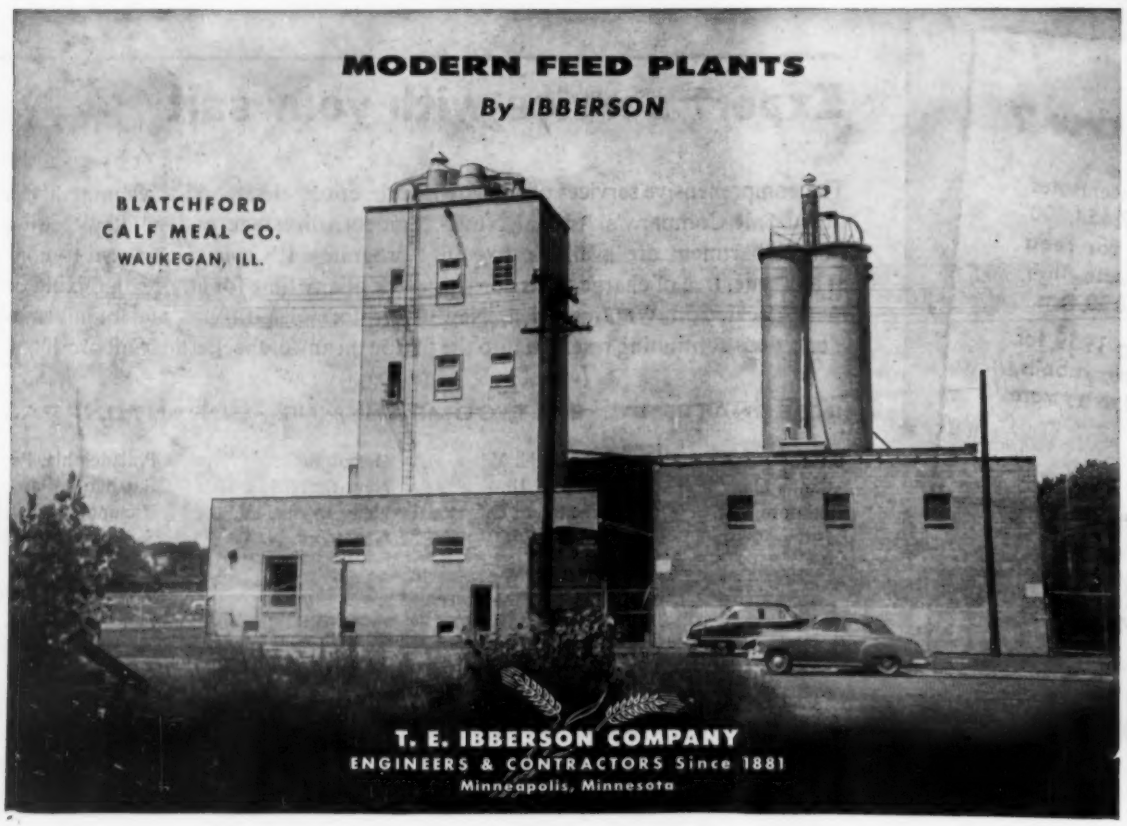
Other contributions to antibiotic technology include assay methods, isolation procedures, purification and stabilization and structural determinations; vitamin and protein contents of residues from the production of penicillin were determined (35). Polymyxin was discovered independently by workers at the Northern Laboratory, and its production and properties were reported (36). Also, the effect of feeding crude polymyxin D on the intestinal bacteria of chickens was determined (37). Hydroxystreptomycin was discovered and its structure determined (38) as well as methods for its production (39). Production of the neomycin complex of antibiotics was also studied (40). Present research is confined to the development of antibiotics effective against plant diseases (41).

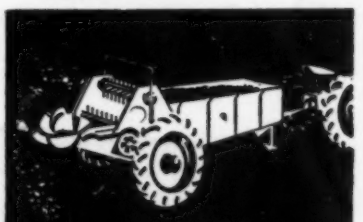
Processing Studies

Studies have been reported (42) on the effects that artificial drying has on the composition of corn. These studies include effects on viability, vitamins, protein, starch, sugar and oil when corn is dried under different conditions. Artificial drying was associated with only minor differences in composition when the corn at harvest contained less than 40% moisture. A more recent report described the effect of artificial drying on corn for industrial processing (43). If corn is to be used for wet processing, grain temperatures should not exceed 140° F. during drying. Higher temperatures gave low quality and poor yields of starch. These temperatures apply to the grain itself and not to the temperature of the drying air. A test was devised to determine the viability and to evaluate heat damage of artificially dried corn (44).

Another problem of considerable interest is the proper toasting of soybean oil meal for maximum feed efficiency. Uncooked, extracted soybean meal is unfit for feed. The raw meal contains certain deleterious factors, such as trypsin inhibitors and hemagglutinating protein, which are destroyed by toasting. Other possibly deleterious factors, such as saponins and isoflavones, may also be destroyed. However, little is known of the fate of these physiologically active constituents during toasting.

Overheating or toasting the meal too long is known to decrease the nutritional value of the protein. Consequently, it is important to establish toasting conditions that give optimum feed efficiency. The extent of protein denaturation during meal processing has been reported (45), and a test





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based on decrease in protein solubility, known as Nitrogen Solubility Index (NSI), has been developed to follow the toasting process. Another method used to determine the degree of toasting received by soybean oil meal is the urease test recently improved and made more sensitive (46, 47). Seed parts were found to contain quite different urease activities (Table 8). Hulls were very low in urease activity, whereas germs gave about twice the activity of the cotyledons.

Hexane or a corresponding petroleum-ether fraction is used for commercially extracting oil from soybeans, but it is explosive and hazardous, and a nonflammable solvent for oil extraction is desirable. Trichloroethylene was found to be such a nonflammable solvent, and 11 soybean oil extraction plants were built in the U. S. during and following World War II to use this solvent. Use of trichloroethylene - extracted soybean oil meal (TESOM) led to widespread outbreaks of hemorrhagic, aplastic anemia in cattle wherever the meal was fed. By 1952, the toxicity had definitely been traced to the meal.

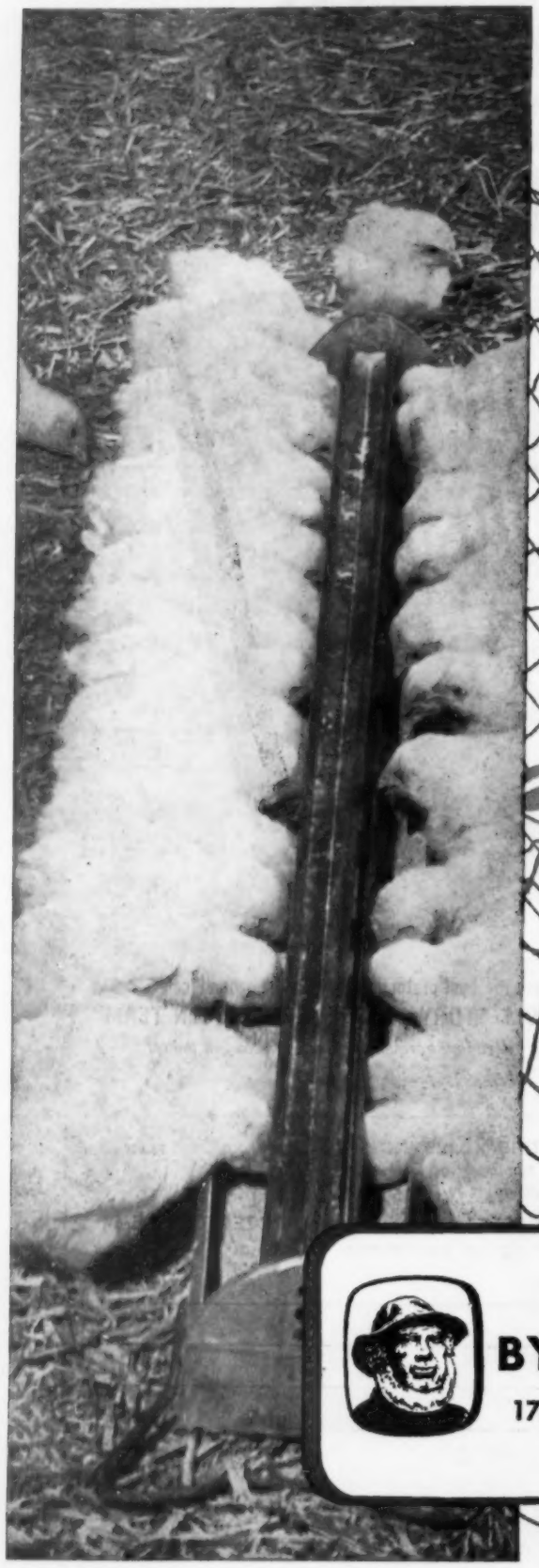
The problem of determining the toxic principle of TESOM was assigned to the Northern Laboratory at that time. No chemical test or laboratory animal assay for the toxicity could be found. Contract research at the Minnesota Agricultural Experiment Station resulted in the development of a reliable calf bioassay (48). This bioassay was then used by the Iowa Agricultural Experiment Station to determine the toxicity in fractions and synthetic preparations supplied by the Northern Laboratory where the chemical studies were made. Fractionation studies showed the toxicity to be associated with the purified TESOM protein (49). Chromatographic separation of protein hydrolyzates resulted in characterization of the toxic principle and its synthesis (50). Trichloroethylene was found to react with sulfhydryl groups of soybean protein under processing conditions to produce S-(dichlorovinyl)-L-cysteine which has physiological properties similar to mustard gas used in World War I.

Feeding studies have been carried out under contract with the Nebraska Agricultural Experiment Station to determine the feeding value of corncobs, processed under various conditions, for cattle rations (51). By adding molasses to cob meal, cattle were induced to clean up their feed. Levels of cob meal in the rations were also established. Other studies have included the molasses absorption capacity of agricultural residues as related to particle size (52). Such residues as sugarcane bagasse, chaff, hulls and screenings were included in this study.

Trends in Feed Research

Great advances have been made in livestock and poultry nutrition in the past decade. Trends are for more mixed feeds—presently at 40 million tons per year. The grain bank plan, which is basically an arrangement between dealer and feeder whereby the feeder stores various amounts of grain with the dealer and later withdraws an equivalent amount in the form of mixed feeds, is rapidly increasing the quantity of mixed feeds and at the same time is improving the quality of feeds used by the farmer. More processing gives rise to more processing problems, hence, to more processing research to get the most out of the inherent composition of feed grains, e.g., flaking, pelleting, dextrinizing, cooking and enzyme treatment.

Research must meet the demands for increased efficiency in mass production of poultry and livestock. More must be known of the composition of ingredient feeds so that complete rations can be formulated most economically. Broiler and cattle industries are developing in the South, and the most economical feeds are those grown locally. For example, sorghum is an economic grain in the



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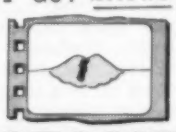
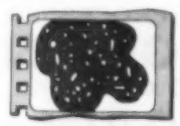
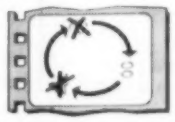
THAT ACTUALLY SHOWS ...WITH FULL-COLOR ANIMATION AND MICRO-PHOTOGRAPHY ...HOW HOGS PICK UP HUNDREDS OF WORM EGGS EVERY DAY. SHOWS WORM EGGS TURNING INTO LARVAE. SHOWS LARVAE MIGRATING THRU VITAL ORGANS, DAMAGING VITAL TISSUE AS THEY GO. SHOWS WORMS HATCHING IN THE INTESTINAL TRACT. SHOWS WORMS BURROWING  INTO INTESTINAL LININGS.

GIVES YOUR **CUSTOMERS** A UNIQUE CHANCE TO SEE HOW WORMS INTERFERE WITH FOOD ABSORPTION, CAUSE  ULCERATED AREAS, OPEN UP TENDER TISSUE TO EASY INFECTION, BLOCK INTESTINES.

THEN ALONG COMES THE HERO... **YOUR HOG FEEDS WITH HYGROMIX**...THE NEW ANTIBIOTIC THAT KILLS THESE WORMS AS THEY ENTER THE INTESTINAL TRACT. STOPS THEM FROM PRODUCING EGGS. PROTECTS HOGS AGAINST COSTLY, HIDDEN DAMAGE...CONTINUOUSLY, DAY BY DAY THROUGHOUT THE CRITICAL GROWING PERIOD. TRULY BREAKS  WORM LIFE CYCLES.

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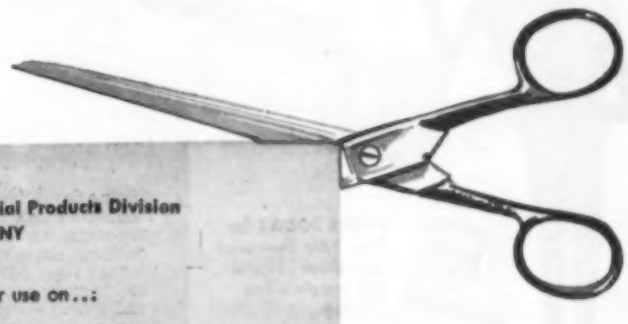

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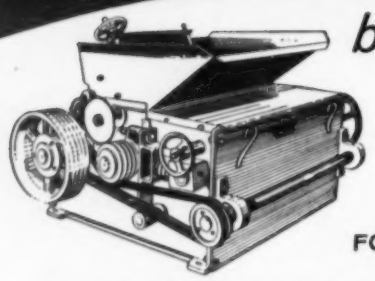

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Southwest, and economically formulated feeds based on grain sorghum could result in expanded livestock and poultry industries in that area.

Further research will be conducted on physiologically active components —such as estrogens, saponins, toxic proteins, growth factors and growth inhibitors—to improve the feeding value of grains and oilseed meals. Grains will be further investigated as substrates for the production of feed supplements by fermentative methods—for example, vitamins, xanthophylls and essential amino acids.

To provide better feeds, research in cooperation with plant breeders will be continued on genetic improvements, such as increasing the carotenoid contents of grain sorghum and corn, increasing the quality and quantity of proteins in cereals and soybeans and increasing the vitamin and oil contents of grains.

A program has been initiated at the Northern Laboratory to search for new crops that can be grown profitably on land now producing surplus crops. One objective is screening for new and higher quality proteins preferably found in conjunction with new oils of potential industrial value. Botanists recognize some 250,000 plant species. A recent literature survey (53) revealed that the amino acid content is known for less than 100 of these plants and their seeds. Who knows what proteins of superior nutritional quality exist, ready to be discovered, in plants that can be developed into economic crops? Table 9 shows high and low values, taken from the survey, for three essential amino acids often deficient in current feed grains. The amino acid contents of corn and soybean proteins, and swine and chick requirements, are shown for comparison.

The science of meat production by mass feeding with properly balanced diets has not yet been developed in Europe and other foreign countries. Steps are being taken to provide friendly countries with improved meat animals and poultry breeds, and to furnish the necessary information on improved feeding practices based on U.S. cereals and oilseed meals. Success in this venture could lead to fncreased markets abroad for the American farmer who now grows feed grains in excess of domestic needs.

Conclusion

Research has made important contributions toward the utilization of cereal grains and oilseed meals in feeds. Significant additions have been made to fundamental science on composition, physical properties and enzymatic transformations. This knowledge has been used by feed scientists everywhere, and it has been the foundation for achievements in quality maintenance, quality improvement and the development of new processes and products of importance to feed utilization.

With proper emphasis on research, there is no doubt that the challenge to produce more meat through better feeds for the world's expanding population can be met.

v v

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New Warehouse Built

LA PORTE CITY, IOWA—The La Porte City Cooperative Elevator has completed construction of an 80 by 36 ft. cement block feed warehouse. The new structure is located near the cooperative's storage bins and is along the Rock Island Railroad tracks.

Capacity of the feed house is 15 carloads of sacked feed. Two rail cars can be unloaded at one time and there are three customer loading docks.

The new building was erected by the Youngblut Construction Co.

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FARGO, N.D.—U.S. farmers lose more than $50 million a year as a result of pinkeye in cattle, according to the North Dakota Agricultural College, Fargo.

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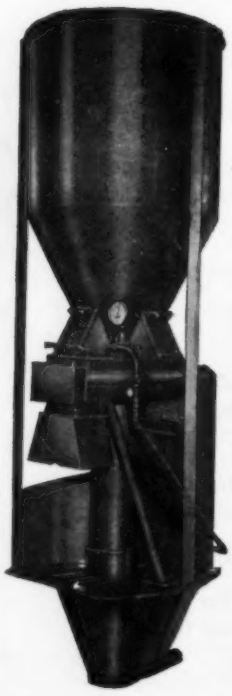

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Minnesota Report Compares Methods Of Hay Handling

ST. PAUL, MINN.—Should hay be chopped, baled, wafered or pelleted? This question was asked in a recent Feed Service bulletin of the University of Minnesota Agricultural Extension Service.

Prof. Rodney A. Briggs, department of agronomy, noted that newly developed methods of handling forages have caused the livestock producer, the equipment manufacturer and the feed dealer to "give a complete reappraisal to harvesting and handling of hay."

"There are many avenues leading to quality forages," he said. "Hay in its natural form is bulky and difficult to handle. It is a mass of connecting stems and leaves that powders when too dry. And when too wet, it heats, molds and ferments."

He noted that many systems and types of machinery are being developed and, in general, there are two aspects to be considered along with these systems: Quality improvement and material handling.

Prof. Briggs commented that in past years, speeding up haying operations resulted in little quality improvement in hay put up on farms. Methods now used in an attempt to preserve the potential value of forages include dehydration, barn curing and crushers or conditioners. "These attempt to prevent the normal losses associated with field-cured hay—shattering of leaves, bleaching by the sun and leaching by rain," Prof. Briggs commented. "The value of the forages resulting determine if the costs are justified by the quality retained."

Excerpts from Prof. Briggs' article provide this "glossary" of the various ways of handling hay:

Chopped hay, when field dried, presents about the same problems in storage as loose long hay. Handling labor can be reduced by air stream or conveyor movement of the material. Forced-air drying for quality retention introduces problems in loading and storage. Self-feeding of chopped hay can be very successful.

Baled hay is compressed to lower its bulk for easier movement from field to storage to feedlot. Its reduced bulk increases storage capacity. Because of the size of the bale, hand labor is required in handling, but newly designed equipment holds promise of decreasing this problem.

Wafers are usually made of coarsely chopped or loose long hay and can be self-fed. They are made in sizes 2-5 in. in diameter and 1-2½ in. thick. Practical wafering machines have not yet been developed. Ideally, wafers should be made at 40% moisture before leaves start to shatter. They could then be dried by forced air or placed into sealed storage units and allowed to ferment, making a high-quality, low-moisture silage.

Pellets are produced in a standard pellet mill, using ground material. Pelleting can be considered either as a means of handling hay or as a means of feeding hay. Pellets increase costs, because of grinding and the pelleting itself, but the costs of these processes may be more than offset by increased consumption and less wastage in feeding. Complete self-feeding with pellets is possible. Quality retention is only possible with the extra costs of dehydration.

Summarizing his comments, Prof. Briggs said a feeder's choice of these four methods of handling hay must be based on quality, ease of handling, reduction of labor, storage requirements and comparative costs.

He commented that at present pellets offer distinct possibilities for beef and lamb feeding. Forages mixed with energy feed, corn or barley can be used with success. Wafers, he said, have few of the advantages of pellets.

"Many questions remain on the practice of forming pellets—such as density, content, protein and fiber of pellets," Prof. Briggs said. "We are a long way from putting a hay wafer in every manger and a pellet in every feed box."

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Joins Cargill-Nutrena Research Farm Staff

ELK RIVER, MINN.—Richard P. Gosen, former instructor in animal husbandry at Rutgers University in New Jersey, has joined the staff of the Cargill-Nutrena research farm here as swine herdsman and research associate.

R. P. Gosen

Mr. Gosen will be in charge of herd management and will work with Dr. Francis Wingert, swine nutritionist, in various nutrition, housing and management research programs. A key project will be work with the Pigloo hog raising system, an isolation and disease control program introduced by Nutrena, feed division of Cargill, Inc.

Dr. Cloy B. Knodt, farm director, said, "Mr. Gosen's research experience in animal husbandry will be of particular value in developing new products, systems and methods."

Mr. Gosen, a native of Windom, Minn., received his bachelor's degree from the University of Minnesota and his master's from Rutgers, where he taught for three years. He is a member of the American Society of Animal Production and the Institute of Food Technology.

Lilly to Market New Hygromycin Product

INDIANAPOLIS—Eli Lilly & Co., Indianapolis, has announced to the feed industry a new, more concentrated form of Hygromix for the control of large roundworms, nodular worms and whipworms in swine. The new product will be sold under the trademark Hygromix-8.

The regular product form of Hygromix will continue to be offered to feed manufacturers, according to G. L. Varnes, executive director of the Lilly agricultural and industrial products division.

Mr. Varnes said Hygromix-8 will require less handling and storage space. Each pound of Hygromix-8 contains 8 gm. of hygromycin B in comparison with 2.4 gm. of hygromycin B in Hygromix. Concentration of the product permits the use of soybean meal as a nutritive carrier, he noted.

Recommendations for use of Hygromix-8 in swine are the same as those for Hygromix.

Cob Processing

PICKERINGTON, OHIO — New cob processing equipment has been installed by Pickerington (Ohio) Mills.

The installation includes a new Thoro-Speed "pre-cut" steel cob house, with electric cob bin unloader, and a Thoro-Speed 72-in. diameter welded steel cob collector with a 3/16-in. replaceable plate liner.

A two-way valve feeds whole cobs either directly to the storage bin and conveyor table of the unloader or into a Thoro-Speed cob crusher.

Cobs are crushed into small pieces so that they can be reground by a hammermill or so that they can be used for bedding, litters or mulches.

Vitamin E Deficiency Not Likely in Swine

URBANA, ILL.—Swine do not easily develop symptoms of vitamin E deficiency, according to recent University of Illinois tests.

In experiments by the University's division of animal nutrition, symptoms were produced only by feeding a vitamin E-free diet to which cod liver oil (equal to 10% of the dry weight of the diet) had been added. This diet was fed to baby pigs from 3 days to 8 weeks of age.

Deficiency symptoms included liver necrosis, yellow fat and degeneration of skeletal and heart muscle. Some animals died. Other affected animals quickly recovered, however, when vitamain E was added to the diet.

These findings emphasize that swine are not likely to be affected by vitamin E deficiency under ordinary circumstances, according to the researchers.

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Pigs May Be Good For Testing Human Infant Formulas

AMES, IOWA — Baby pigs may prove to be good test animals for human babies' feeding problems, according to Iowa State College swine nutrition researchers.

Dr. Damon Catron, in charge of swine nutrition research at the college, and Francis Diaz, said they recently used 136 pigs between one and five weeks old to study the performance of pigs fed commercially-prepared human infant diets as compared to the performance of pigs fed diets which had previously resulted in satisfactory weight gains and feed conversion.

They found the pigs' gains up to five weeks of age were satisfactory for the pigs receiving formulas containing milk as the source of protein when the protein levels were about 2.7 to 3.4% of the total liquid diet, and the fat totaled about 2.8%. But when the protein level dropped to 1.7 and 1.6% and the fat content was 3.4 to 3.5%, the performance was not as good as that for pigs on their regular baby pig pre-starter and starter rations.

Dr. Diaz and Dr. Catron said this experiment appears to provide a sound evaluation of the human babies' milk formula. One of the indications would be, they pointed out, that the baby milk formula should provide at least 2.7 to 3.4% protein in the liquid diet. (All diets tested in this experiment provided 20 calories of energy per fluid ounce.)

However, the researchers said, the data need to be corroborated by carefully controlled clinical studies and observations with human infants before the test results on pigs are accepted as final.

The use of pigs as test animals to help develop better formulas for human babies came after researchers at other stations had found rats—often used to "stand in" for man in scientific tests—couldn't grow well on human milk. The rats are not able to properly utilize the large amount of lactose in human milk.

Dr. Catron and his staff, learning of this need for a test animal to try out human babies' diets, recognized from their work in developing baby pig pre-starter feeds, that baby pigs require nutrients in about the same proportion as human babies do.

In 1956, Dr. D. B. Hudman of Catron's staff, evaluated carbohydrates for baby pigs. This was important in pig pre-starter work, but it also revealed the fact that pigs, unlike rats, and much like human babies, could utilize lactose more efficiently than they could other energy feeds.

"This is too much!"

Some research by C. J. Lewis of Dr. Catron's staff on enzymes and protein utilization for baby pigs had been reported in 1955. It further supported the idea that baby pigs require a diet somewhat similar to that of human babies.

Dr. Diaz' report of the success in evaluating seven different human baby diets through their effects on baby pig growth and nutrient utilization was reported in the May issue of the Journal of Nutrition.

On one of the human baby foods the test pigs gained an average of 16.1 lb. in four weeks. That was almost as good as the 16.6 lb. average gain on their own baby pig prestarter and starter ration during the same period.

They used only 1.22 lb. (dry matter) of this particular baby formula to make each pound of gain. They used 1.32 lb. of their prestarter and starter for a pound of gain.

The pigs also "put the finger" on some baby foods of less value. One of the baby foods that had only 1.5% protein and 3.5% fat in it allowed the pigs to gain less than half as much weight as the pigs getting the high-protein—low fat formula—and they required 1½ lb. (dry matter) of the low-protein formula for every pound of gain they made.

NEW FEED FIRM

VICTOR, IOWA—Long Green Soil Builders Co., Marengo, has purchased property in Victor for the site of a 100,000 bu. commercial grain unit. Additional land along the Rock Island railroad is under lease for later construction of an elevator and complete commercial feed operation. A scale capable of handling 60-foot trucks will be installed. Anhydrous ammonia also will be handled by the new firm. The new business will be managed by Ray Storck of Marengo.

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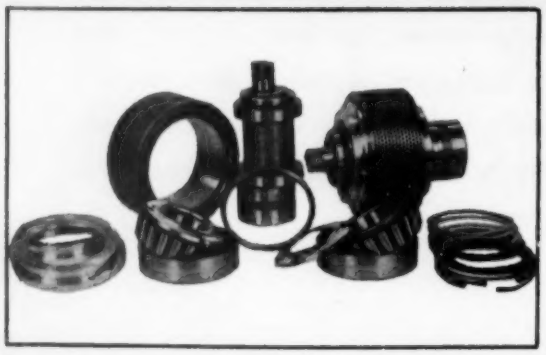

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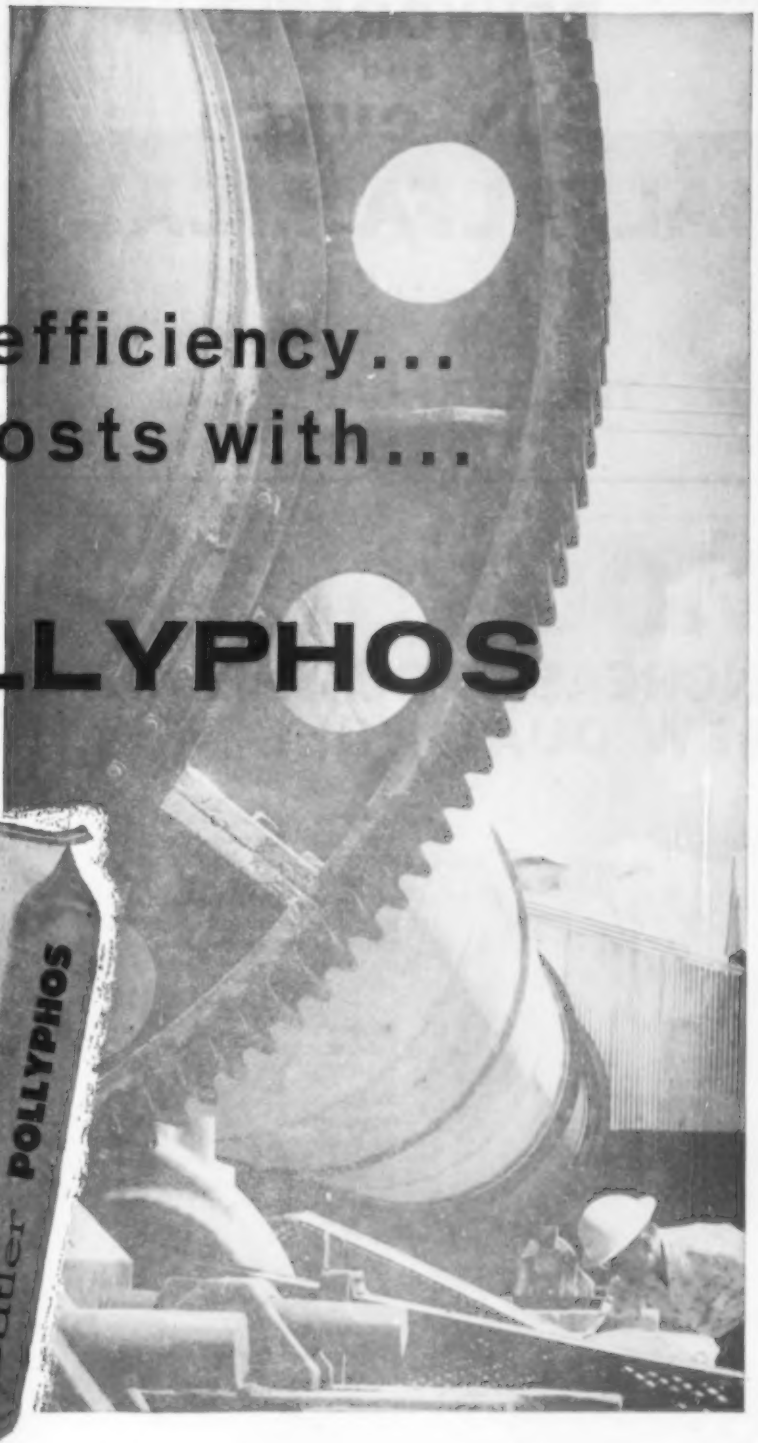

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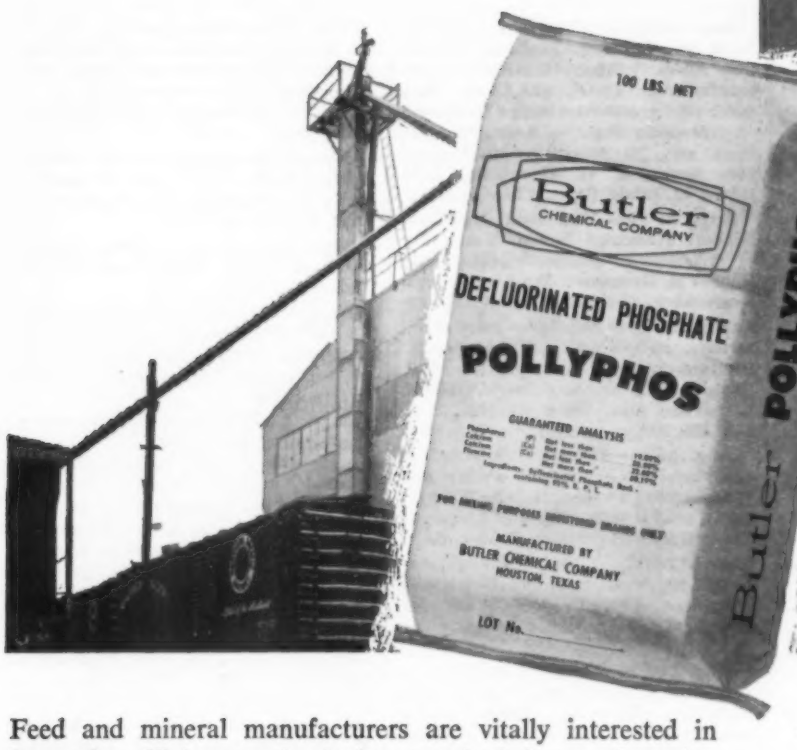

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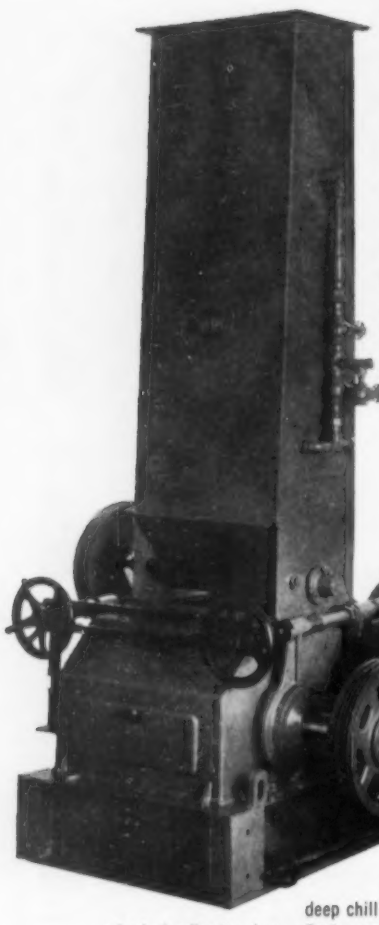

Moorspeed Feed Grain Roller Mill showing new Dual Roll Drive. Protective guard was removed for photograph.

Better feed conversion! Full retention of grain in ration! Replacement of original grain moisture for higher profits! These can be yours with a Moorspeed Feed Grain Roller Mill . . . now with a choice of drive! The new Dual Roll Drive or the Single Roll Drive. Superior for all grain milling needs, Moorspeed with Dual Roll Drive is particularly effective for rolling corn, milo, sorghums, as well as barley, oats, and wheat. So consult Moore about Feed Grain Mills. Our new design, superior construction, and economical operation assure full return on every feed dollar!

Moorspeed Dual Roll Drive is optional on new mills. It has been specially designed for convenient conversion of mills now in use. Installation is so easy it can be done locally with simple drawings and template furnished free as an installation aid from Moore.

Moorspeed Feed Grain Roller Mills Lead the Field!

Rigid, maintenance-free construction • Solid, deep chill iron rolls • New, higher capacity self-aligning spherical roller bearings • Fast, accurate, easy roll adjustment • Manual throwout lever with lever lock • Higher steaming capacity.

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☐ Please send free information on Moorspeed Feed Grain Roller Mills. No obligation, of course.

☐ Please send conversion information on new Dual Roll Drive for existing Moorspeed Mills.

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CALENDAR FOR 1959-60

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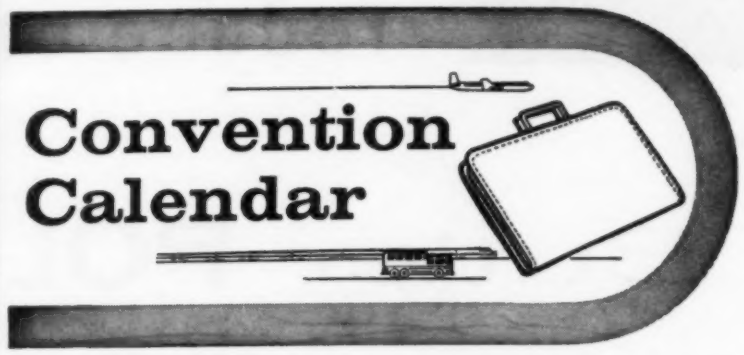

Aug. 10-12 — American Soybean Assn. and National Soybean Processors Assn., joint convention; Sheraton-Jefferson Hotel, St. Louis, Mo.; exec. vice president, George M. Strayer, American Soybean Assn., Hudson, Iowa; sec., National Soybean Processors Assn., R. G. Houghtlin, 3818 Board of Trade Bldg., Chicago 4, Ill.

Aug. 11-12 — Wisconsin Nutrition School; Memorial Union, University of Wisconsin, Madison; chm., Dr. Robert H. Grummer, Dept. of Animal Husbandry, University of Wisconsin.

Aug. 17-18 — Kentucky Feed Conference, sponsored by University of Kentucky and Kentucky Feed & Grain Assn.; Brown Suburban Hotel, Louisville; sec., Jack Weber, P. O. Box 425, Lexington, Ky.

Aug. 23-25—Poultry Industries of Louisiana, Inc.; Captain Shreve and Washington Youree Hotels, Shreveport; sec., Clyde Ingram, Louisiana State University, Baton Rouge, La.

Aug. 23-25 — The National Hay Assn.; Sir Francis Drake Hotel, San Francisco; sec., Fred K. Sale, 600 Board of Trade Bldg., Indianapolis, Ind.

Aug. 24-27—Georgia Poultry Institute; Rock Eagle 4-H Club Center; Eatonton, Ga.; chm., Arthur Gannon, Poultry Division, University of Georgia, College of Agriculture, Athens, Ga.

Aug. 28—Purdue Swine Day; Purdue University, Lafayette, Indiana; chm., Dr. J. H. Conrad, Animal Science Department.

Sept. 3-4—Symposium on Magnesium in Agriculture; West Virginia University, Morgantown, W. Va.; Dr. G. C. Anderson, head, Animal Husbandry Dept.

Sept. 4 — Illinois Cattle Feeders Day, University of Illinois, Urbana; chm., A. L. Neumann, Beef Cattle Division.

Sept. 4—Swine Day; University of Missouri, Columbia; chm., Prof. Leland Tribble, Animal Husbandry Department.

Sept. 9-10 — Pet Food Institute, Drake Hotel, Chicago; sec., Clyde Kassens, 332 S. Michigan Ave., Chicago, Ill.

Sept. 9-10 — Maryland Poultry Service Conference; University of Maryland, College Park; chm., Wade H. Rice, University of Maryland, College Park, Md.

Sept. 9-17 — Illinois State Turkey Growers Assn., farm of Clarence Ziemer, Elmwood, Ill.; sec., S. B. Swann, Kauffman Turkey Farms, Waterman, Ill.

Sept. 13-14—Grain and Feed Dealers National Assn. (work meeting for directors, committees and members), Minneapolis; exec. vice pres., Alvin E. Oliver, 400 Folger Bldg., Washington 5, D.C.

Sept. 15-16—Mutual Millers & Feed Dealers Assn.; Jamestown, N.Y.; sec., Margaret Bentley, 41 Chautauqua Ave., Jamestown, N.Y.

Sept. 15-17—Dixie Poultry Exposition; Asheville, N.C.; sec., N. B. Nicholson, Monroe, N.C.

Sept. 17-18 — Arkansas Formula Feed Conference; University of Arkansas, Fayetteville; chm., Dr. E. L. Stephenson, Department of Animal Industry.

Sept. 18 — College-Feed Industry Conference; Iowa State College, Ames; chm., Prof. Emmit Haynes, Animal Husbandry Dept.

Sept. 23 — Vermont Feed Dealers and Manufacturers Assn.; University of Vermont, Burlington, Vt.; sec., D. C. Henderson, Hills Agricultural Science Building, Burlington, Vt.

Sept. 23-25 — Feed Production School; Continental Hotel, Kansas City; sponsored by Feed Production School, Inc.; pres., Lloyd Larson, 20 W. 9th St. Bldg., Kansas City 5, Mo.

Sept. 24-26 — Pennsylvania Millers & Feed Dealers Assn.; Yorktowne Hotel, York, Pa.; sec., Donald W. Parke, P.O. Box 329, Ephrata, Pa.

Sept. 26—Small Mill Short Course; Continental Hotel, Kansas City; sponsored by Feed Production School,

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New Listings

For the convenience of readers who scan the Convention Calendar regularly for new listings, those added to the column in the current week appear separately from ones which have been entered previously. The following week they will be moved to their proper slot where they will remain until the event is held.

● ● ●

Sept. 11—Minnesota Swine Feeders Day; Peters Hall Auditorium, University of Minnesota, St. Paul, Minn.; Prof. R. J. Meade, Animal Husbandry Department.

Sept. 24-26—Pennsylvania Millers and Feed Dealers Assn.; Hotel Yorktowne, York, Pa.; sec., Donald W. Parke, Box 329, Ephrata, Pa.

Nov. 16-17—Washington Animal Industry Conference; Yakima Junior College, Yakima, Wash.; sec., John G. Wilson, Washington State Feed Assn., Inc., 814 Second Avenue Bldg., Seattle 4.

Dec. 3-4—North Carolina Animal Nutrition Conference; North Carolina State College, School of Agriculture, Raleigh; chm., E. R. Barrick, Head, Animal Husbandry Section.

Inc.; pres., Lloyd Larson, 20 W. 9th St. Bldg., Kansas City 5, Mo.

Sept. 29-30 — Pacific Northwest Garden Supply Trade Show; Masonic Temple, Portland, Ore.; mgr., Russ Hays, 702 Lewis Bldg., Portland, Ore.

Oct. 1-2—National Feed Ingredients Assn.; Pick-Congress Hotel, Chicago, Ill.; sec. Peter W. Janss, 212 Equitable Bldg., Des Moines, Iowa.

Oct. 6-8 — Northeastern Poultry Producers Council Exposition and Convention; Farm Show Building, Harrisburg, Pa.; chm., Alfred Van Wagenen, 10 Rutgers Place, Trenton 8, N.J.

Oct. 7-9—Texas Nutrition Conference; Texas A&M College, College Station; chm., Dr. J. R. Couch, Department of Poultry Science.

Oct. 11-14—Kentucky Poultry Federation and Kentucky Poultry Improvement Assn.; Cumberland Falls State Park, Corbin; sec., John W. Tuttle, 730 Rose St., Lexington, Ky.

Oct. 14 — Animal Nutrition Research Council; Shoreham Hotel, Washington, D.C.; sec., Irwin Olcott, Dawe's Laboratories, Inc., 4800 S. Richmond St., Chicago 32, Ill.

Oct. 14-15—Association of American Feed Control Officials; Shoreham Hotel, Washington, D.C.; sec., Bruce Poundstone, Agricultural Experiment Station Bldg., University of Kentucky, Lexington, Ky.

Oct. 15-16—Michigan Feed & Grain Dealers Assn.; Kellogg Center, Michigan State University, East Lansing, Mich.; sec., Nevels Pearson, P.O. Box 472, East Lansing, Mich.

Oct. 15-16 — West Virginia Feed Dealers Assn. convention; Blackwater Falls Lodge, Davis; sec., J. S. Larrick, Beckley Ice & Feed, Beckley, W. Va.

Oct. 19-20—Beef Research Conference (attendance by invitation); Purdue University, Lafayette, Ind.; sponsored by Agricultural Research Institute and National Academy of Sciences-National Research Council; Dr. C. B. Cox, Agricultural Economics Department, Purdue University.

Oct. 19-20—California Animal In-

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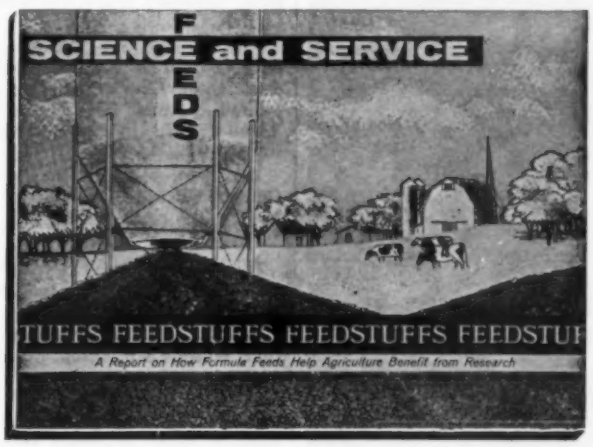
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Cattle Nutrition — Swine Rations — Improved Feed Formulation

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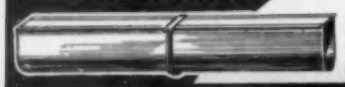

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dustry Conference; Fresno Memorial Auditorium, Fresno, Cal.; sponsored by California Hay, Grain & Feed Dealers Assn. and University of California; chm., Berton Maxwell, Poultry Producers of Central California, Petaluma.

Oct. 20-21—Virginia State Poultry Federation; Hotel John Marshall, Richmond, Va.; sec., J. Paul Williams, 615 E. Franklin St., Richmond 19, Va.

Oct. 22-23 — Annual Stockholders Meeting, Cooperative G.L.F. Exchange, Inc., Onondago County War Memorial Building, Syracuse, N.Y.

Oct. 22-23 — Iowa Seed Dealers Assn.; Savery Hotel, Des Moines; sec., Bob Skinner, 928 Des Moines Bldg., Des Moines 9, Iowa.

Oct. 29—Nebraska Feed & Nutrition Conference; University of Nebraska, Lincoln; chm., Dr. John Adams, Poultry Husbandry Department.

Oct. 30—Rooters Day; University of Nebraska, Lincoln; Dr. E. R. Peo, Animal Husbandry Department.

Oct. 30 — Illinois Sheep Producers Day; University of Illinois, Urbana; chm., Dr. U. S. Garrigus, Department of Animal Science.

Nov. 4-5—Illinois Feed Assn. and Illinois Poultry Improvement Assn., joint convention; Armory, Springfield, Ill.; IFA, Leland Hotel; sec., Dean M. Clark, Board of Trade Bldg., Chicago; IPIA, St. Nicholas Hotel; sec., Aubrey Harless, Box 91, Shelbyville, Ill.

Nov. 4-7 — National Renderers Assn., Hollywood Beach Hotel, Hollywood Beach, Fla.; sec., Miss Jamie Fox, 30 N. La Salle St., Chicago 2, Illinois.

Nov. 5-6—Florida Nutrition Conference; University of Florida, Gainesville; sponsored by Florida Feed Dealers Assn. and Florida Agricultural Experiment Station; chm., Dr. J. P. Feaster, Department of Animal Husbandry and Nutrition.

Nov. 6-7—Oklahoma Formula Feed Conference; Oklahoma State University, Stillwater; chm., Dr. Rollin H. Thayer, Poultry Science Department. Jackson Blvd., Chicago 4, Ill.

Nov. 12-13—Cornell Nutrition Conference; Hotel Statler, Buffalo, N.Y.; chm., Dr. F. W. Hill, Poultry Husbandry Dept., Cornell University, Ithaca, N.Y.

Nov. 16—Tennessee Feed Manufacturers Assn., Claridge Hotel, Memphis, Tenn.; sec., Charles H. Warfield, American Trust Bldg., Nashville, Tenn.

Nov. 19-20—National Swine Industry Conference; Iowa State College, Ames; chm., Keith Myers, National Swine Growers Council, Grundy Center, Iowa.

Nov. 22-24—Western Grain & Feed Assn. of Iowa; Fort Des Moines Hotel, Des Moines, Iowa; sec., Bob Skinner, 928 Des Moines Bldg., Des Moines 9, Iowa.

Nov. 27-28 — American Society of Animal Production; Sherman Hotel, Chicago, Ill.; sec., Dr. H. H. Stonaker, Colorado State University, Ft. Collins, Colo.

Nov. 30-Dec. 1 — Midwest Veterinary Nutrition Conference; President Hotel, Kansas City; sec., Lloyd Larson, Midwest Feed Manufacturers Assn., 20 W. 9th Street Bldg., Kansas City 5, Mo.

Dec. 8-9 — Poultrymen's Service Clinic; Cornell University, Ithaca, N.Y.

1960

Jan. 4-5 — Kansas Formula Feed Conference; Kansas State University, Manhattan, Kansas.

Jan. 5-7—National Turkey Federation; Hotel Leamington, Minneapolis; sec., M. C. Small, P. O. Box 69, Mt. Morris, Ill.

Jan. 17-19—Indiana Grain & Feed Dealers Assn.; Claypool Hotel, Indianapolis, Ind.; sec., Fred K. Sale, 600 Board of Trade Building, Indianapolis 4, Ind.

Jan. 25-27 — Southeastern Poultry & Egg Assn.; Municipal Auditorium, Atlanta, Ga.; sec., Harold E. Ford, 235 E. Ponce de Leon Ave., Decatur, Ga.

Feb. 4-5—Oregon Animal Industry Conference; Oregon State College, Corvallis, Ore.; chm., Dr. J. E. Parker, Poultry Husbandry Department.

Feb. 8-9—Montana Nutrition Conference; Montana State College, Bozeman; chm., Dr. O. O. Thomas, Animal Industry Dept.

Feb. 8-9—Midwest Feed Manufacturers Assn.; Muehlebach Hotel, Kansas City; exec. vice pres., Lloyd Larson, 20 W. 9th St. Bldg., Kansas City 5, Mo.

Feb. 10-11—Pacific Northwest Feed Mill Production School; Chinook Hotel, Yakima, Wash.; sponsored by Washington State Feed Assn., mgr., John G. Wilson, 814 Second Ave. Bldg., Seattle 4, Wash.

Feb. 11 — Boston Grain and Flour Exchange Annual Banquet; Sheraton-Plaza Hotel, Boston; chm., Paul Sutliff, 177 Milk St., Boston, Mass.

Feb. 12 — Washington State Feed Assn.; Chinook Hotel, Yakima,

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Feb. 12-14—Fact Finding Conference, sponsored by the Institute of American Poultry Industries; Municipal Auditorium, Kansas City, Mo.; pres., Harold M. Williams, 59 East Madison, Chicago, Ill.

Feb. 21-23 — Ohio Grain & Feed Dealers Assn.; Commodore Perry Hotel, Toledo; sec., G. E. O'Brien, 694 N. Ohio Street, Greenville, Ohio.

Feb. 22-23—Virginia Feed & Nutrition Conference; Hotel Roanoke, Roanoke; J. Paul Williams, sec., Virginia State Feed Assn., 615 E. Franklin St., Richmond, Va., or Prof. Paul M. Reaves, Department of Dairy Science, Virginia Polytechnic Institute, Blacksburg, Va.

March 7-8—Grain & Feed Dealers National Assn.; Hotel Muehlebach, Kansas City; sec., Herbert L. Sharp, 400 Folger Bldg., Washington 5, D.C.

March 17-18—Oregon Feed & Seed Dealers Assn.; New Sheraton Hotel, Portland, Ore.; mgr., Russ Hays, 702 Lewis Bldg., Portland, Ore.

March 23—Distillers Feed Conference; Sheraton Gibson Hotel, Cincinnati; sponsored by Distillers Feed Research Council; exec. director, Dr. Lawrence E. Carpenter, 1232 Enquirer Bldg., Cincinnati, Ohio.

April 11-13—Poultry and Egg National Board, LaSalle Hotel, Chicago, Ill.; mgr., Floyd Geil, 8 S. Michigan Ave., Chicago 13, Ill.

April 21-23—California Hay, Grain & Feed Dealers Assn., Ambassador Hotel, Los Angeles; sec., John Gilmore, Blue Anchor Bldg., 1400 10th St., Sacramento 14, Cal.

April 21-23—Kansas Grain & Feed Dealers Association; Broadview Hotel, Wichita, Kansas; sec., Orris E. Case, 609 Wiley Bldg., Hutchinson, Kansas.

May 9-11—American Feed Manufacturers Assn.; Conrad Hilton Hotel, Chicago; sec., W. T. Diamond, 53 W.

GRAIN FIRM INCORPORATES

GREAT FALLS, MONT. — Anderson-Brown Grain Co. has been incorporated, listing $250,000 capitalization, by Charles B. and Marion C. Anderson, and Carl and Bernice E. Brown, all of Great Falls.

Broiler-House Litter Valuable Ingredient In Livestock Feeds

COLLEGE STATION, TEXAS—Texas A&M College recently published an article on "Broiler-House Litter as Livestock Feed," by Dr. Arthur A. Camp, in its Texas Agricultural Progress magazine.

The text of the article follows:

One of the major problems confronting any industry is to convert its by-products into usable items.

Poultry processors used to spend hundreds of thousands of dollars in disposing of offal (head, feet, entrails) and feathers obtained during processing. Through research, it was found that these by-products may be converted into valuable feed ingredients for livestock and poultry.

Litter remaining in the houses after the chickens are sold is another by-product which has considerable potential value. It has been known for years that used litter is a good source of organic matter and certain nutrients for the soil. Research during the past five years indicates that used broiler-house litter may be a valuable ingredient when incorporated into livestock feeds.

It was observed that cattle would "graze" on, and seemed to relish, used litter taken from the houses and piled in the fields. Broilers actually use a very small part of the feed they consume. For example, approximately 7½ lb. of feed (6¾ lb. on a 90% dry-matter basis) are now required to produce an 8½ weeks old, 3-lb. broiler. Since such a broiler is only about one third dry matter, then 6¾ lb. of feed on a dry matter basis are used to produce 1 lb. of broiler on a dry matter basis. Therefore, approximately 5¾ lb. of feed are not converted to meat.

Some of this feed is used to maintain the body temperature of the bird and supply energy for its activity, but the possibility existed that a portion of the feed passed in the droppings would have nutritive value.

Samples of litter were obtained and its approximatel analysis determined. The average analysis of several samples of litter taken under various conditions was: protein (or protein equivalent), 24%; fat, 0.50%;fiber, 15%; ash, 14%; and dry matter, 88%.

Protein Value Increases

If the producer is using a built-up litter operation, the protein value of the litter increases as the number of bunches of broilers produced on the litter increases. If only one bunch of broilers was produced on the litter, the protein value will be approximately 21-22%. But if three bunches of broilers were produced on the litter, its protein value will be about 24-25%. One sample of litter on which nine runs of broilers were produced contained 33% protein.

Broiler-house litter has been used successfully in both cattle and swine feeds. For approximately three years, range cattle were fed the following diet with good results: used broiler-house litter, 40%; ground sorghum grain, 38%; alfalfa meal, 10%; molasses, 10%; defluorinated rock phosphate, 1%; and salt, 1%. These cattle were fed 3-5 lb. of this diet per head daily, and produced good, healthy calves which grew well. In not one instance was there a sign of disease.

A modification of this diet, in which used litter was included at the level of 25% of the total diet, was used satisfactorily in drylot feeding operations. Growing calves weighing 400 lb. or more apparently can use the litter efficiently when fed at not more than 25% of the total diet.

Breeder swine were fed a diet which contained 40% used litter for approximately two years and consistently produced large, vigorous litters. Feeder pigs weighing 60-100 lb. made fast gains and economical feed conversion when fed a diet containing 15% litter. Heavier feeder pigs, 100 lb. and up, were fed the litter up to 25% of the total diet with excellent results. In a controlled feeding trial with 32 feeder pigs, 3 lb. of used broiler-house litter were substituted in the diet for 1 lb. of soybean meal and 2 lb. of ground sorghum grain without significantly altering either the growth rate or feed conversion. Levels of litter used were 15 and 25% as mentioned above.

Not Treated

The litter is not treated in any way before it is incorporated into livestock feeds. It may be ground, but this is not essential. It may be helpful to pellet feed containing litter, but this also is not essential. Care should be taken to avoid getting rocks, glass, nails and the like in the litter to be used for livestock feed.

In all the work mentioned, the original litter used was either peanut hull or cane. However, there is one case in which a ranchman fed cedar sawdust litter to range cattle for more than two years with good results.

What you should know about oxidative deterioration of inedible animal fats

WHAT is oxidative deterioration?

Oxidative deterioration of animal fats is caused by oxygen in the air reacting with the unsaturated portion of the fat molecule. This reaction produces free peroxide radicals which, in turn, appear to trigger a lengthy chain reaction that results in formation of a variety of aldehydes, ketones and acids. Once started, the process cannot be reversed; if allowed to continue, it proceeds at an increasing rate.

WHY is it important to feed processors?

Oxidative deterioration, unless checked, rapidly makes its presence known in the form of rancidity. Nothing destroys the marketability of feeds so quickly as the pungent, tallowy odor and flavor characteristic of rancidity.

HOW can oxidative deterioration be controlled?

Oxidative deterioration can be controlled effectively with antioxidants. Incorporated by the renderer in the animal fats you buy, these chemical compounds retard oxidative deterioration by checking the rancidity-producing chain reaction referred to above. Inasmuch as the chain reaction cannot be reversed, it is essential that antioxidants be added as early as possible in the processing of the fat.

WHICH antioxidant is best?

While an antioxidant formulation containing BHA (butylated hydroxyanisole), citric acid and propylene glycol, such as Eastman Tenox R, is quite effective in stabilizing economically a wide variety of greases and tallows, no single antioxidant or combination of antioxidants can be relied upon to solve all fat stability problems.

The most effective and most economical formulation for any particular feed must take into account such factors as the initial stability of various fats produced in different localities at different times of the year, how they are processed, methods of distribution, length of storage and type of packaging.

Advice and assistance in selecting the best formulation for your specific requirements is available from the Eastman Food Laboratories.

WHERE are these antioxidants available?

All principal antioxidants in use today are available from Eastman, marketed under the trade name TENOX. These include BHA, BHT (butylated hydroxytoluene) and propyl gallate, alone or in solution formulations containing various combinations and ratios of these antioxidants, with or without a metal chelating agent. For more information, write to Eastman Chemical Products, Inc., subsidiary of Eastman Kodak Company, Kingsport, Tennessee.

Tenox Eastman antioxidants for animal fats

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tennessee; Atlanta; Chicago; Cincinnati; Cleveland; Detroit; Framingham, Massachusetts; Greensboro, N. C.; Houston; New York; St. Louis.
West Coast: Wilson Meyer Co., San Francisco; Denver; Los Angeles; Phoenix; Portland; Salt Lake City; Seattle.
Canada: P. N. Soden Co., Ltd., Montreal, P. Q.; Toronto, Ontario.

"We do our best to deserve the business we get," says Elmer Moritz

"Service to customers has built our business"

E. H. Easter, representing a fertilizer company, makes a soil test for Rudy Kappler, a Hamel Cooperative Grain Company customer.

Mr. and Mrs. Moritz weigh up a load of grain for Check-R-Mixing at Carpenter.

Mr. Moritz and Leonard Vieth, manager of the Carpenter store, say that this "Pig Parlor" has built business by demonstrating a modern method.

Farmer Walter Schaake, one of the many grain bank users, expresses his satisfaction to Mr. Moritz.

—says Elmer Moritz, General Manager, Hamel Cooperative Grain Company

Service is the cornerstone in the business philosophy of Hamel Cooperative Grain Company, operating two Purina Service Centers, one at Hamel and the other at Carpenter, Illinois.

It is a cornerstone that was carved right, for around it the firm's annual volume has grown from $40,000, when Mr. Moritz became manager 15 years ago, to around $1,800,000 today.

Among the many activities of these two Service Centers are Check-R-Mixing . . . a grain bank . . . bulk and bag delivery . . . on-the-farm help with feeding and management problems. At both Centers farm folks find a full line of Purina Chows, Sanitation Products and related merchandise.

Hamel Cooperative Grain Company is another fine example of good customer service combined with excellent personnel to build business for a Store with the Checkerboard Sign.

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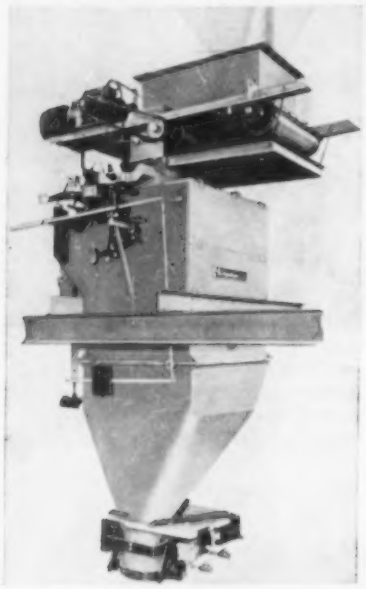
No. 7608—Bagging Scale

A bagging scale designed to load dry feeds into 100, 50 and 25-lb. bags at high speed has been announced by Richardson Scale Co. The Richardson GA-38 is rated to fill 50-lb. bags at a rate of 12 per minute for dry mash feeds or range cubes and 15 per minute for crumbles or scratch grains. Material is conveyed to the scale by a heavy-duty, two-ply rubber belt, 22 in. wide. A slide regulates material depth on this belt. As the beam of the scale comes into balance, an electrically controlled pneumatic mechanism automatically closes the inlet gate. A compensator, adjustable from the floor, corrects for variations in the density of the falling material. It is available in 3 and 4 bu. sizes and capacity for larger volume is available on order for the handling of lightweight materials. Manually controlled or air-operated bagholders are available. For further details, check No. 7608 on the coupon and mail.



No. 7607—Air Vibrator Bulletin

The National Air Vibrator Co. announces the availability of a four-page bulletin detailing applications of its one-piece air vibrator. Vibrator models are illustrated operating successfully in hazardous atmospheres, extreme moisture conditions, outside in severe weather and in magnetic dust conditions, the company said. Specifications and mounting information on eight models are included. The vibrators are used for moving bulk materials through hoppers, bins and chutes. Copies of the brochure can be obtained by checking No. 7607 on the coupon and mailing.

No. 7609—Temperature Systems Literature

Hot Spot Detector, Inc., announces the release of illustrated installation literature on the Hot Spot Detector Temperature Systems for flat storage. The publications picture and detail installation procedures for factory fabricated temperature systems in straight sidewall steel storage buildings, wonder buildings and corrugated metal bins. The publications are in color. Hot Spot systems vary from small singular units to automatic digital recording scanners, the company said. For copies of the literature, check No. 7609 on the coupon and mail.

No. 7610—Half-Round Aeration Duct

Rolfes Grain Aeration Companies announces the introduction of a "half-round" aeration duct for use in flat storage buildings. The duct has a 25½-in. diameter, and comes in 2-ft. sections. The galvanized duct is corrugated for extra strength. The unit is installed in a "sill assembly," an angle iron track which the 2-ft. sections fit into. The unit is shipped "nested," offering a savings in shipping costs and simplified storage, company literature said. The unit has been tested under a 45-ft. load of grain. The company also designs and manufactures a 30-in. half-round as well as 12-in., 18-in., and 24-in. full-round galvanized ducts. For details, check No. 7610 on the coupon and mail.

No. 7612—New Package Size

Abbott Laboratories announces a new 2,000 gallon size Gallimycin package. The package was developed particularly for the large poultryman or commercial operator, the company said, and a special feature of the 20-lb. drum is that the product is packaged in 40 individual ½-lb. sealed plastic bags. Each bag contains sufficient antibiotic to treat 50 gal. of water. According to company literature, this feature eliminates the time consuming job of weighing or measuring. Each bag contains the exact amount of antibiotic needed. For information, check No. 7612 on the coupon and mail.

No. 7614—Bulk Storage Tank

A bin for outside or inside storage which holds five tons of feed at 40 lb. per cubic foot has been announced by Leach Manufacturing Co. The unit is designed to make bulk handling of dairy feed practical, including feed with molasses content, the company said. A top is available for outside storage. The bin can also be provided with an auger attached. The slide door on the straight side of the bin makes it easy to check on the amount of feed or, when necessary, to break a bridge, company literature said. Heavy duty rotary gates are built up in the hopper in such a way that one half of the large opening can be opened at a time. This makes a partition in the bin practical if needed. The bin can be clustered into groups. For details, check No. 7614 on the coupon and mail.

No. 7611—Materials Handling Unit

A dumper that lifts and dumps complete implant bulk trucks has been introduced by Conveyors & Dumpers, Inc. The unit is designed for rapid, low-cost batch loading and mixing, grinding and pulverizing machinery or kettles, tanks, vats and other process equipment. It permits the truck to be filled and weighed remote from the receiving vessel. The dumper is available in capacities up to 3,000 lb. and dumping heights to 50 ft. It is furnished in portable and stationary models. Although of standardized design, it can be varied to accommodate almost any size truck as well as a variety of containers, the company said. For further information, check No. 7611 on the coupon and mail.

Send me information on the items marked:

- ☐ No. 7607—Air Vibrator Bulletin
- ☐ No. 7608—Bagging Scale
- ☐ No. 7609—Temperature Systems Literature
- ☐ No. 7610—Half-Round Aeration Duct
- ☐ No. 7611—Materials Handling Unit
- ☐ No. 7612—New Package Size
- ☐ No. 7613—Checkweight Literature
- ☐ No. 7614—Bulk Storage Tank

(PLEASE PRINT OR TYPE)

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No. 7572—Pneumatic bulk unit.

No. 7587—Inert atmosphere gener-

No. 7613—Checkweigher Literature

An illustrated, four-page folder describing the latest development in heavy duty, high speed checkweighing is available from Toledo Scale, Division of Toledo Scale Corp. The literature illustrates and describes the features of the Toledo Model 9460 automatic checkweigher. Optional accessories described in the folder include automatic pilot lights and numerical counters. Methods of adjustments and weight settings are also described. To obtain the folder, check No. 7613 on the coupon and mail to this publication.

Also Available

The following new products have been described in previous issues of Feedstuffs and information about them may still be obtained by jotting the appropriate number on the coupon and forwarding it to Feedstuffs.

No. 7571—Cob and shuck retarder, C. O. Bartlett & Snow Co.

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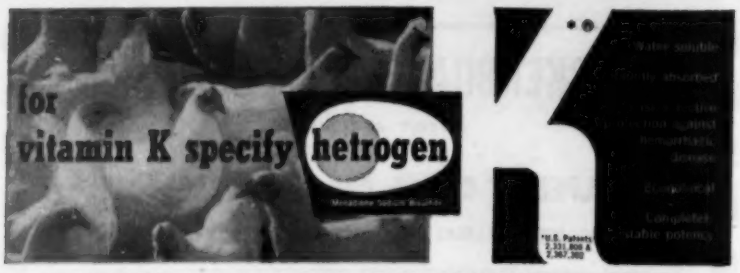

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No. 7577—Bulk fumigant, Ferguson Fumigants, Inc.

No. 7578—Extractor magnet, Magni-Power Co.

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No. 7603—Feed Fat Bulletin, Procter & Gamble Distributing Co.

No. 7604—Shovel-barrow, Gar-Bro Manufacturing Co.

No. 7605—Fall pack promotion, Chas. Pfizer & Co., Inc.

No. 7606—Booklet on coccidiosis, Dorn & Mitchell Laboratories, Inc.

Annual PENB Meeting Scheduled in Chicago

CHICAGO—The 20th annual meeting of the Poultry & Egg National Board has been scheduled at the LaSalle Hotel in Chicago on April 11-13, 1960, announced Ralph J. Thomas, president of PENB.

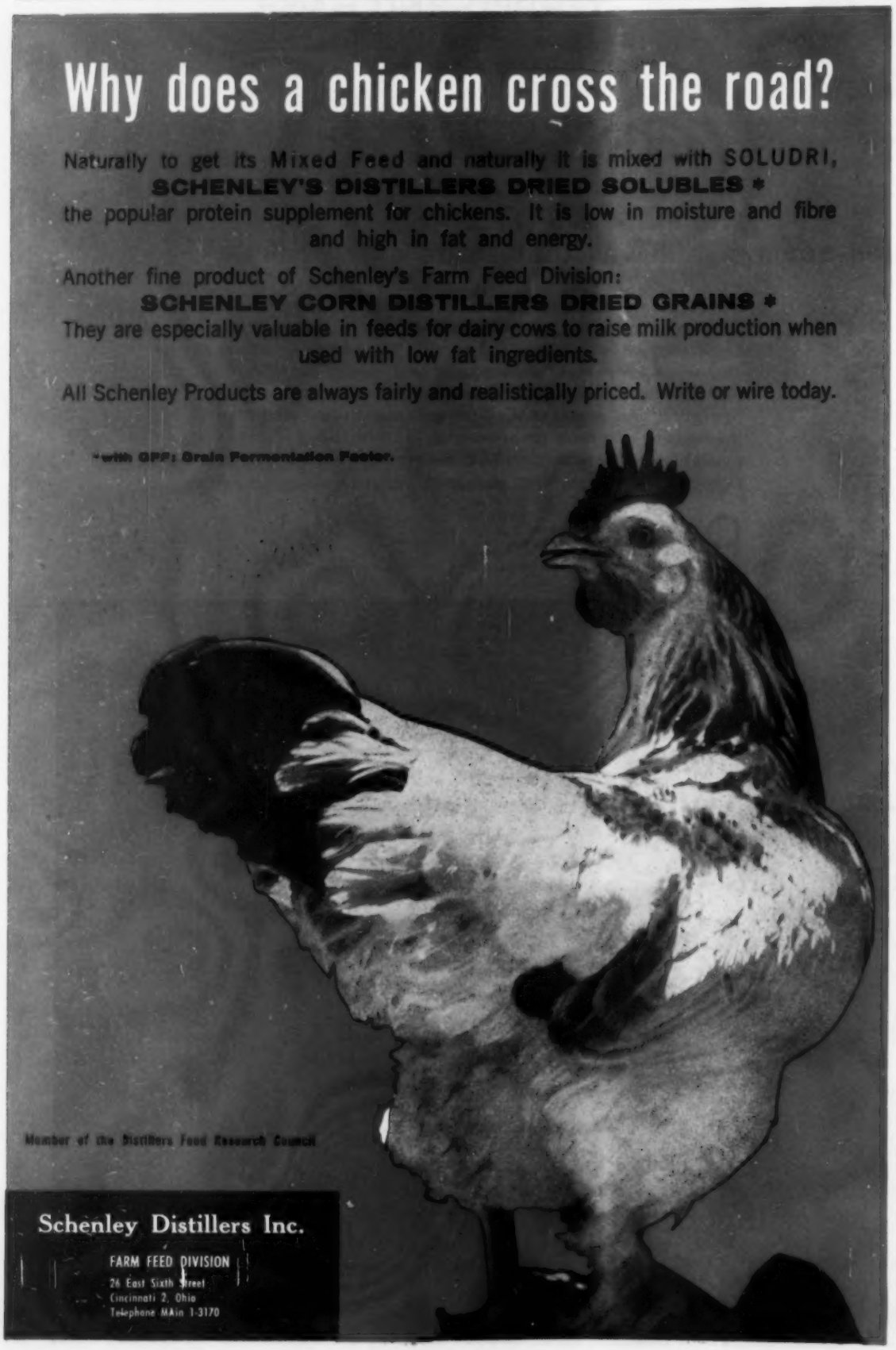
Mr. Thomas stated the purpose of the three-day session as follows:

"1. To give membership (producers, processors, handlers, feedmen and other groups) an opportunity to express their thinking on ways PENB can be more helpful in strengthening markets for them.

"2. To give the advisory committees an opportunity to provide counsel to the directors and staff on matters concerning policy, finance and promotions.

"3. To give the board of directors an opportunity to get first-hand industry viewpoints on PENB operations to guide them in their policy-making functions for the best interests of the entire industry.

He said that ample time will be provided for progress reports on the industry's investments in PENB, and the subsequent use of these funds to stimulate consumer demand for poultry products.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Maryland Poultry Service Conference Sept. 9-10 Expanded

COLLEGE PARK, MD.—The University of Maryland Poultry Service Conference, started two years ago to sift problems of service men in the poultry industry, has been expanded to include service men's problems in the dairy, beef and swine industries.

The move was made in response to a request by the conference advisory board, composed of feed and poultry producer service personnel. An advisory board of nine industry members and a University committee of representatives of the poultry, dairy and animal husbandry and livestock sanitary departments sponsors and conducts the conference.

Topics scheduled for this year's conference, Sept. 9-10, are first week brooding management, processing plant condemnation, coccidiostats, Newcastle vaccine breaks, drug toxicities, hatching and market egg sources and the "Stump the Experts" question panel.

Ken V. Naden, agricultural counsel, National Association of Food Chains, Washington, will point out current merchandising problems of meats in chain store merchandising at an evening banquet.

Feeding and management problems in dairy, beef and from the feed service men's standpoint will be sifted on the second day of the conference.

Guest speakers scheduled for the 1959 conference, in addition to Mr. Naden, include Joe H. Bethards, Laurel, Del.; Dr. G. A. Marsh, Ohio State University; Dr. O. L. Osteen, U.S. Department of Agriculture, Beltsville, Md.; Dr. George P. Faddoul, Waltham, Mass.; Dr. R. L. Baker, Pennsylvania State University; William A. Haffert, Poultry Digest, Sea Isle City, N.J., and Louis L. Goldstein, Maryland comptroller.

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4. REQUIRES LESS MAINTENANCE than any other type of pit unloader.

Built to meet your needs, the Kelly Duplex Pit Auger can be furnished in any length with choice of 12", 14" or 16" diameter screw—can have any length hopper opening—can have drive unit located at either end of the machine—and can be equipped with any size motor.

The Kelly Duplex Pit Auger offers you an entirely new system of pit unloading—a system designed to give you better delivery and BIGGER PROFITS. Constructed entirely of heavy, arc welded steel . . . it handles both husked and snapped ear corn as well as all types of small grain—assures an even, uniform flow of material—is smooth and noiseless in operation—and gives you big capacity at low horsepower. Maintenance costs are low because there are fewer moving parts—and far less chance of breakdown—than with any other type of pit unloader. Features include an inspection door at the discharge end . . . an enclosed gear reducer and enclosed roller chain drive, both of which run in oil . . . and variable speed control. An automatic motor control, which keeps auger from causing ampere fluctuation on a hammermill or other machine, is available as optional equipment.

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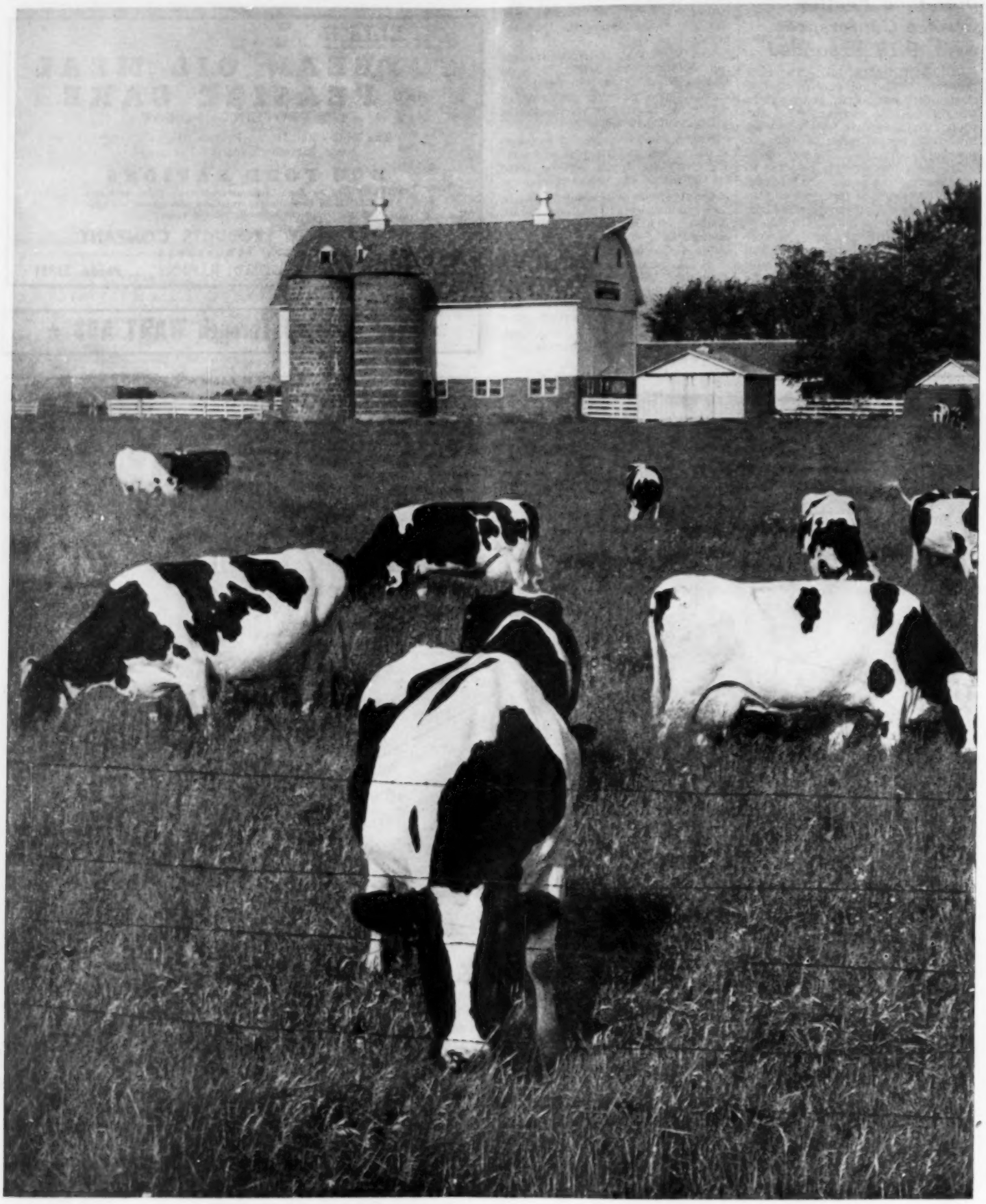

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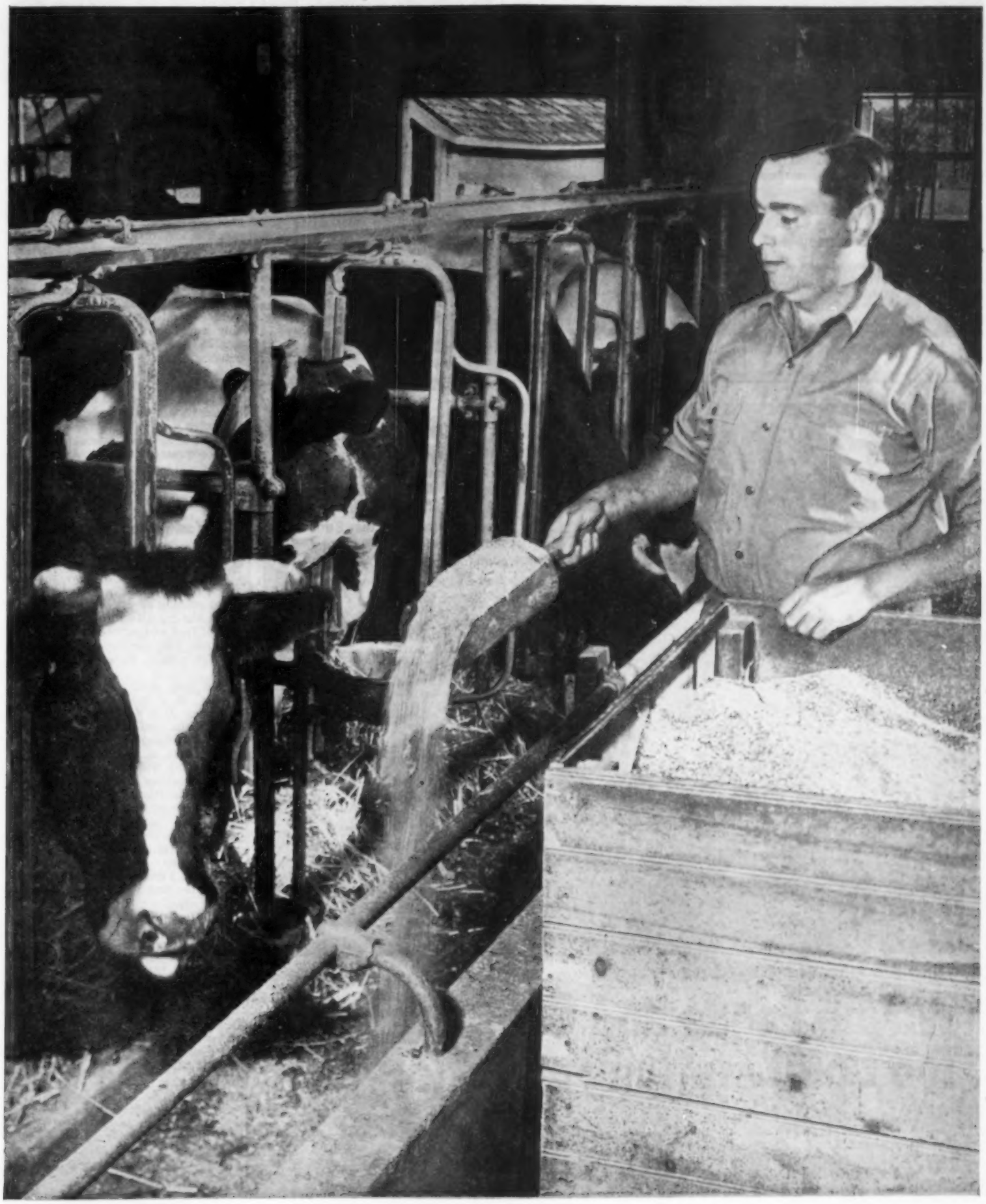

This month and next month Cyanamid advertising to dairymen will carry a story similar to that being told by many feed manufacturers in their own advertising.

In effect, that story is: "Get the *most* out of your summer feeding! Pasture alone can't give your cows all the food values they need for sustained high production. When you feed grain or roughage, provide also a balanced formula feed.

"When you're feeding cows bred to be high producers, the need for extra proteins, minerals, vitamins and an effective antibiotic in the ration is highly important. This is particularly true in late summer when pasture may be close-cropped and dry.

"Formula feeds keep cows in better health, help maintain good flesh, help prevent summer slumps. Cows that have freshened in the spring reach peak production quickly and sustain it. Cows that will freshen in the fall taper off more slowly and remain in better weight and condition to produce strong, healthy calves.

"AUREOMYCIN® in formula feeds helps reduce invisible, sub-clinical diseases that retard health, slow down milk flow. It is effective against respiratory infections and foot rot that may result from stress conditions."

As you urge your customers to make it a regular practice to give cows a balanced formula feed the year round — recommend also the use of AUREOMYCIN for better health protection. Incorporate AUREOMYCIN! American Cyanamid Company, Agricultural Division, New York 20, New York.

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FEED CONTROL COMMENT

By BRUCE POUNDSTONE
Secretary, Association of American Feed Control Officials
Kentucky Agricultural Experiment Station, Lexington

Feed Microscopy

An item in the news speaks of feed microscopy as "this comparatively new field." Attention is properly called to the need for many in the feed industry and to some extent in feed control circles to get acquainted with this technique for studying feeds.

To most control people it is not new and might even be classed as an old device. A feed microscopist as a position has been provided for in some states continuously ever since the turn of the century. Feeds were studied microscopically even before the passage of some feed bills. The findings of microscopic study led to the enactment of at least one feed law. This law undoubtedly would have been passed without this sort of background, but, nonetheless, this work was regarded so highly that much of the evidence given the legislature at the time included a summary of microscopic studies of feed samples. It was not a "science" then, to be sure, but, as now, a very valuable tool.

When feed microscopy "came of age" is a matter of conjecture. This may still be in the future in the eyes of some. Certainly the formation of the Association of American Feed Microscopists is a milestone in this development. This association has held six annual meetings. The short course in feed microscopy at the Texas Agricultural Experiment Station which has been held for two summers and the short course just concluded at Missouri bear testimony to the growing interest in this field. The Association of American Feed Microscopists is now being incorporated, further evidence of its development along sound lines. Information about this association can be had by writing to: G. M. Barnhart, secretary-treasurer, Missouri Department of Agriculture, Jefferson City, Mo.

◆

Dried Egg Powder

Spray dried whole egg powder not fit for human use has been proposed as a possible feed ingredient. The inquiry states that there are sources of spray dried whole egg powder, which comes from eggs with blood spots, and not for human use. It also mentions eggs which do not hatch out. The inquirer wonders if it is permissible to use these dried eggs in livestock feeds, fish feeds, mink feeds, game bird feed and other feeds.

This inquiry is not too specific and it is therefore possible to make only some general comments. There probably would be no objection to using eggs containing blood spots and incubator clears if processed by spray drying the whole egg powder. Decomposed eggs should not be used for this purpose. The Food and Drug Administration would probably require that such materials be adequately denatured prior to shipment in interstate commerce to make certain that they would not be diverted for human use.

◆

Washington Invitation

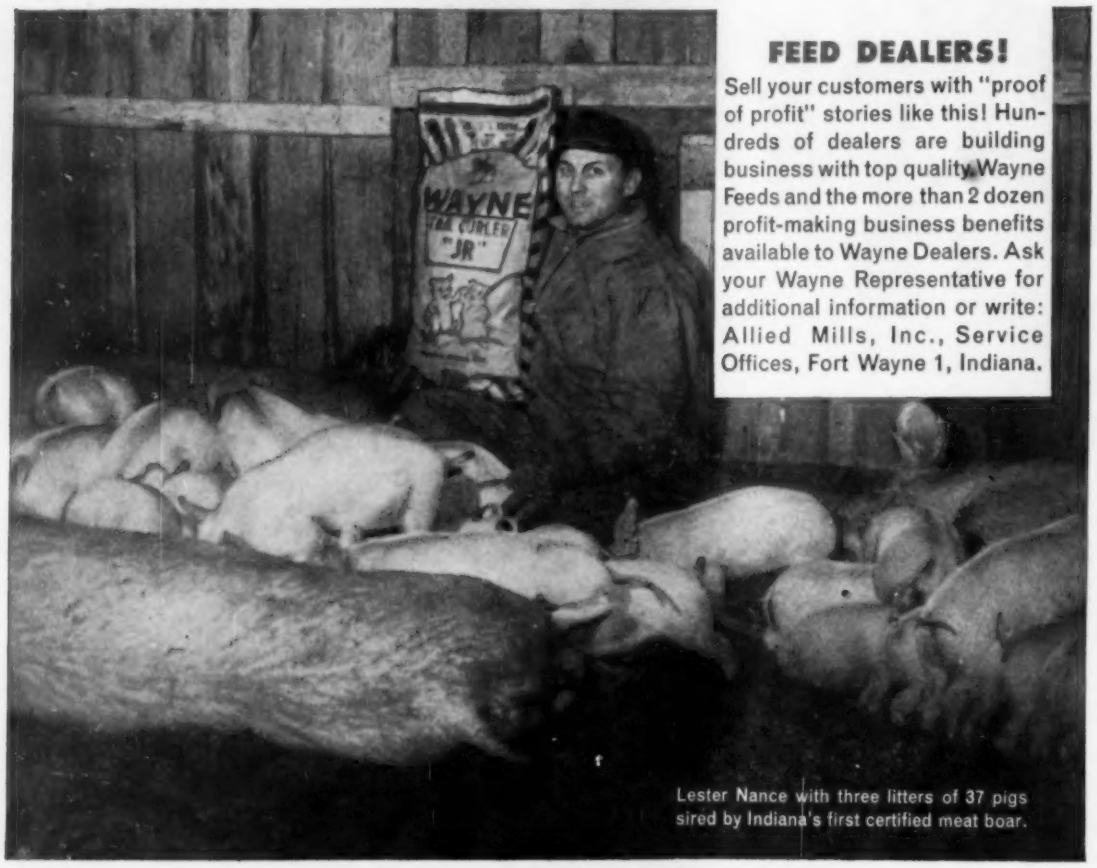
With the 49th annual convention of the Association of American Feed Control Officials only two months away, plans should be completed for those wishing to attend. All interested in the manufacture and distribution of feed and related industries are welcome. The meeting is scheduled at the Shoreham Hotel, Washington, D.C.

The first session on "States Relations" is of particular interest to feed men. It is here that representatives of the feed industry and control officials exchange ideas. Any question on the part of either group is welcome. This will begin in the Park Room, Tuesday night, Oct. 13, at 7 o'clock. Questions mailed during the next few weeks can be listed for attention on the agenda and preparation for discussion prepared in advance. Al Smith, Central Soya Co., Fort Wayne, Ind., is chairman of American Feed Manufacturers Assn. committee and Wally Griem of Wisconsin is chairman of the AAFCO committee, co-sponsors of this meeting. Mail questions direct to them.

Another important meeting is the general session which opens at 1 p.m., Oct. 14, in the West Ballroom. This will be devoted largely to reports of committees and investigators. These will include proposals with respect to new regulations and definitions as well as revisions of those now of record in the association's annual publication.

The concluding session is scheduled for Thursday morning. Speakers on subjects of special interest will be heard. The report of the executive committee upon adoption of definitions, etc., will be presented and acted upon at the conclusion of this session. This becomes the official action of this meeting.

Again, everyone interested in feeds is welcome to attend and participate. Make room reservations now so as to avoid disappointment.



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FEED WORKSHOP—Part of the unique program of the recent Feed Manufacturers Conference sponsored by Clemson Agricultural College was a workshop at which participants formulated different feeds. The group is shown formulating dairy feeds. The conference program covered basic fundamentals of various aspects of feed manufacturing.

Fundamentals of Feed Manufacturing Featured at South Carolina Conference

By DR. VICTOR HURST
Dairy Husbandman
Clemson College

CLEMSON, S.C.—The recent Feed Manufacturers Conference sponsored by Clemson Agricultural College featured a unique type of program.

The conference, held July 13-14, was the first of its kind to be held in South Carolina.

There are many nutrition courses offered for feed manufacturers over the country—many are advanced and offer to participants the latest developments in nutrition. It was the feeling of the sponsors of the Clemson conference that many smaller feed manufacturers needed a conference devoted to such basic subjects as feed formulation, common feed ingredients, laws governing feed manufacturing, grades of grain and the complexities involved in working with feed additives and micro-mixing.

One day, therefore, was devoted to talks and panel discussions on these subjects. The second day was set aside for a workshop. There, in successive 50-min. periods, guided by teaching teams, the conferees were required to formulate beef and sheep concentrates, dairy concentrates, swine rations, poultry rations, and calculate for best buys in feed ingredients.

A total of 31 was registered, including both large and small feed manufacturers, as well as representatives of allied industries.

Was the conference pitched at too low a level? Not according to a questionnaire answered by participants before leaving. Was the program, although attended by only small numbers, a success? We think so because everyone indicated that he would be willing to take another try at it next year.

Chairman of the conference was Dr. Victor Hurst, dairy husbandman, and working with him were Dr. B. D. Barnett, poultryman and chairman of the program committee, and Dr. Graydon W. Brandt, dairy husbandman, chairman of the physical arrangements committee.

The program was staffed by members of the research and extension staffs of the animal husbandry, dairy and poultry departments.

Guest speakers were Ralph Magoffin, director of the bureau of inspection, department of agriculture at Columbia, S.C.; E. W. Siedschlag, Clemson extension marketing specialist, and Clifford Simms, crop reporting service, Columbia.

Guest banquet speaker was Hugh Agnew, president of the South Carolina Farm Bureau Federation.

CONFERENCE OFFICIALS—Shown are three of the people who participated in the program of the recent Feed Manufacturers Conference sponsored by Clemson College. They are (left to right): Dr. B. D. Barnett, Clemson poultry husbandry department, chairman of the program committee; Hugh Agnew, president of the South Carolina Farm Bureau Federation, who was the conference banquet speaker, and Dr. M. D. Farrar, dean of agriculture at Clemson, who gave the conference welcoming address.

Illinois Turkey Meeting Planned for Sept. 17

ELMWOOD, ILL.—A day of talking turkey and eating turkey is scheduled for Sept. 17, 1959, when the Illinois State Turkey Growers Assn. holds its annual fall meeting at the Clarence Ziemer farm, Elmwood.

The program includes a tour of the turkey flocks, brooding setup, dressing plant and commercial exhibits. Some 27,000 turkeys are raised and processed annually on the 120-acre farm. A dressing plant with a capacity of 400 turkeys per day is on the premises and is in the process of becoming a government inspected plant.

D. D. Moyer, A. E. Staley Co., Decatur, Ill., will talk on "Cutting Production Costs." "Where to From Here," will be discussed by Dr. L. A. Wilhelm, Quaker Oats Co., Chicago, Ill.

A panel group will discuss, "What We Want in a Packaged Turkey," and Frank A. Donnelly, Frank A. Donnelly Corp., Chicago, will take a look at "Market Forecast 1950-60."

Georgia Poultry Fair Planned Sept. 14-19

GAINESVILLE, GA.—Sept. 14-19 has been set as the date for the first Georgia Poultry Fair to be held here.

The new poultry fair will replace the Northeast Georgia Fair in name. The Junior Chamber of Commerce changed the name of the fair it sponsors because of northeast Georgia's title of "the broiler capital of the world."

A loan of $25,000 was obtained recently by the Jaycees to make improvements on the fairgrounds, including a new exhibit building, relocation of a fence, grading and changes in lighting.

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The following reprints of articles which have appeared in Feedstuffs may be obtained on order from Feedstuffs' Reader Service Department:

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17. **How to Make a Grain Bank Pay**—by John E. Bonnett, Bonnett Feed & Grain Co., Bushnell, Ill. **20c**
19. **Dairy Calf Feeding Research**—by Dr. Frank M. Crane, Land O'Lakes Creameries **20c**
20. **Bulk Feed Handling Operations**—Reprint of 3 articles by Al P. Nelson, Special Writer for Feedstuffs **40c**
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Sell Gulf Vitamins Controlling Interest

PASCAGOULA, MISS.—First Mississippi Corp. has acquired controlling interest in Gulf Vitamins, Inc., from T. L. Murphy, Jr., Pascagoula, and Duane E. Thompson, Birmingham, Ala.

For about a year, the Gulf Vitamins plant has been producing a soluble fish meal made from scrap or trash fish for use in manufactured feeds, primarily for poultry and swine.

It was reported that the product will be bagged in multi-wall, 100-lb. paper bags produced by First Packaging Corp., whose plant at Yazoo City is nearing completion and which is controlled by First Mississippi Corp.

Of the 63,000 tons of fin fish estimated to have been landed in Jackson County last year, 35,000 tons were scrap or trash fish of the type to be used in the enzymatic process of Gulf Vitamins. A recent Mississippi State College test showed that chicks fed Gulf Vitamins' fish meal gained an average of 2.43 lb. each during the eight-week test.

Gulf Vitamins officers are: Owen Cooper, chairman of the board; J. F. Babbitt, president; C. Z. Stevens, III, vice president and general manager; T. L. Murphy, vice president, and Gordon H. Meador, secretary-treasurer.

Directors are: T. L. Murphy, Jr., Pascagoula; D. E. Thompson, Birmingham, Ala.; Hermes Gautier, Pascagoula; Owen Cooper, Yazoo City; Gordon H. Meador, Jackson; J. F. Babbitt, Jackson, and Dwain G. Luce, Mobile, Ala.

FEED STORE RE-OPENED

PRINEVILLE, ORE.—The Prineville Feed Store, which re-opened recently following a fire, is now operating as a branch of the Deschutes Farmers Co-op of Redmond. It will continue under its original name, with Russie H. Vincent, former owner, as manager. Gus Haggland, manager of the main store in Redmond, made the announcement.

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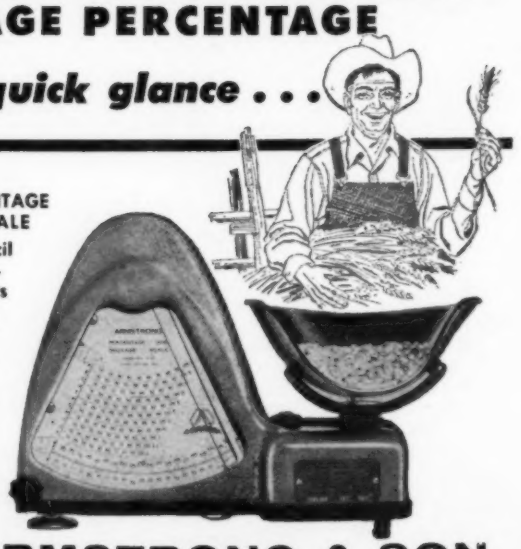

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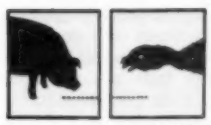

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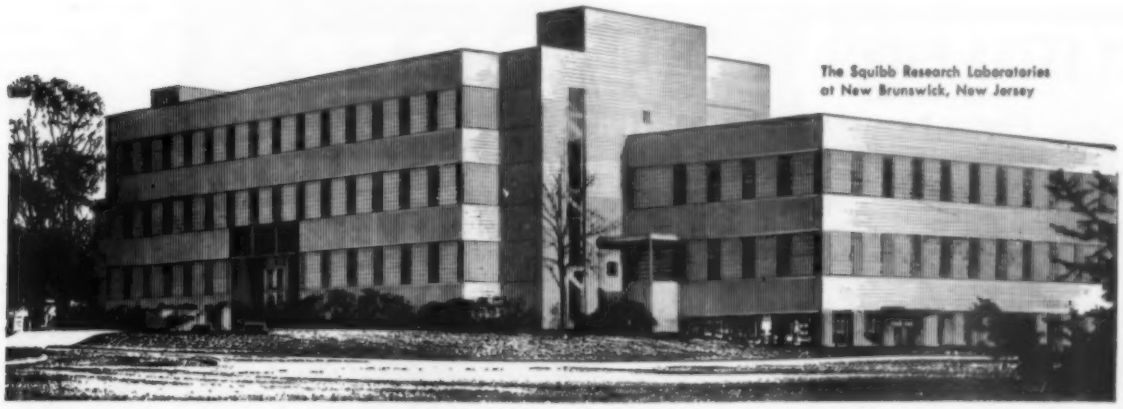

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YOUNG AND OLD—Young queens and an old car (1919 Model T Ford) were part of the festivities at the recent Poultrymen's Get-Together at Cornell University. Winner of the queen contest was Mary Ellen Station (left), of Scipio Center, New York. The girls' chauffeur (right) is Prof. J. H. Bruckner, head of the poultry department at Cornell.

New York Poultrymen Meet at Cornell, Agree They Can Remain Competitive

By Special Correspondent

ITHACA, N.Y.—By making adjustments in its operations to keep in step with the times the poultry industry in the New York area will be able to remain competitive. This was the consensus of several hundred poultrymen and specialists who attended the recent Poultrymen's Get-Together at Cornell University.

Those attending the conference generally agreed with Prof. J. H. Bruckner, head of Cornell's poultry department, that competition will continue to grow keener, and nearness to market will gradually fade out as being an asset to New York poultrymen.

Cornell specialists pointed out that the poultry industry is going through a revolution, and it will be more difficult for many to keep pace. Some will fall by the wayside. They pointed out that other businesses fail also—about 40% of the new ones fail the first year. On the other hand, some poultrymen always make money.

Prof. C. E. Ostrander, Cornell, said, "Poultrymen must compete on cost of production and quality of product. In some instances, our 'manufacturing' plants are obsolete and need rebuilding, replacing or remodeling.

"We must start to think in terms of big business and act accordingly. At the same time we must apply better business management. We must do a better job more efficiently."

Broiler Contracts

Pros and cons of contracts in the broiler business received a thorough going over by Prof. Dana C. Goodrich, marketing specialist at the State College of Agriculture at Cornell. He pointed out that contracts in the industry are undergoing several revisions. Some of these changes concern management practices and facilities, the adjustment of payment schedules by reducing flat fees or guarantees, and establishing and intensifying incentive plans or relating grower payments to market prices.

Prof. Goodrich indicated that today's poor prices account for these contract revisions. He told poultrymen not to expect any two contracts to be exactly the same, and said that contracts may change in form and specifications constantly.

He said advantages of contracts are that the contractor is assured of a supply of raw products, desirable quality of birds, and maintenance of feed, chicks, equipment and sales volume. For the grower, advantages include a source of capital, minimum risk and better management methods.

Disadvantages are short-run losses on a falling market for the contractor, and a loss of "independence" for the grower. Ultimately, contracts must benefit both parties, but there will be a weaker bargaining position on the part of the grower.

Effects of Controls

Dr. Ralph L. Baker, Pennsylvania State University, predicted, "Contract farming in the egg business is expected to speed up the trend toward fewer but larger producers, lower costs, and total egg production that may increase faster than the population."

He declared all segments of the poultry industry will be affected by contract marketing and quality control, contract production and owner-integrated programs.

Despite lower egg prices, Dr. Baker said, many producers who are able to dovetail their production and marketing operations, and take advantage of cost-lowering possibilities of integration, may have fairly good net income. On the other hand, he added, many producers and market operators

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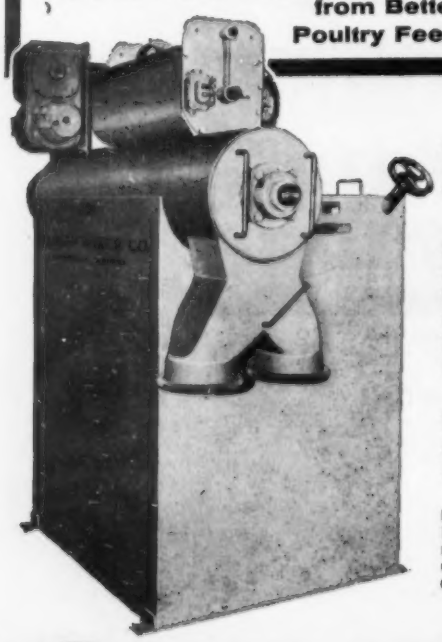

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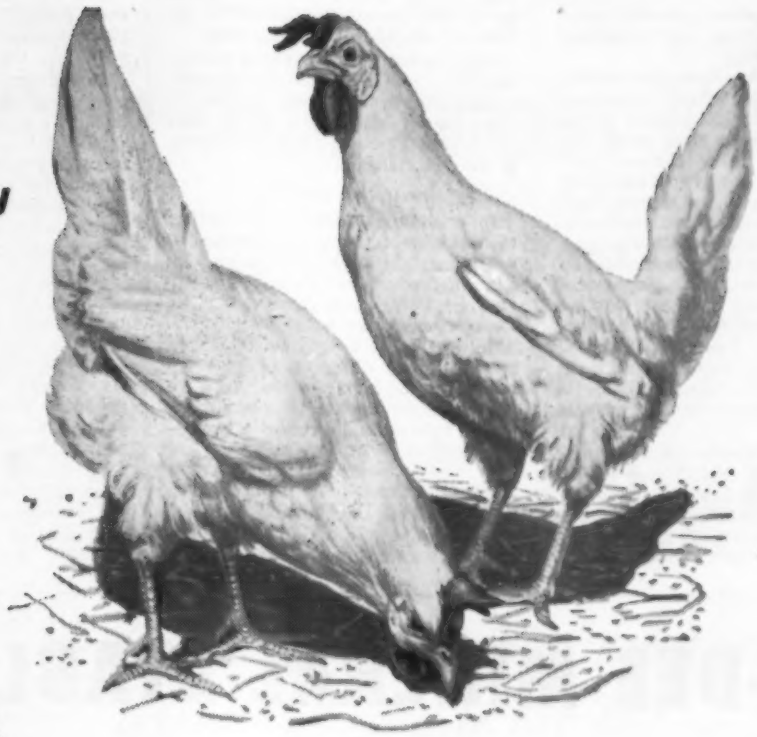

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Still looking for an effective, low-cost antibiotic supplement? Why not have PRO-STREP® added to your next Merck custom premix and demonstrate—with on-the-farm results—how PRO-STREP can pay off for you and your growers in maintaining or improving egg production, feed efficiency, and hatchability of fertile eggs. Merck & Co., Inc., Chemical Division, Rahway, New Jersey.

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may decide to go out of the egg business.

The visiting speaker recently spent six months studying egg programs throughout the U.S.

He told the New York poultrymen that producers on contract marketing and quality control programs in the Northeast receive higher prices for their eggs than some contract production or owner-integrated operators in other areas, and considerably higher prices than midwestern producers.

In a special session for egg producers, four Cornell specialists discussed changes in housing and management necessary to meet existing trends. Prof. Dean R. Marble pointed out that at present prices for started pullets, the policy of purchasing them instead of rearing them at home is an expensive luxury many producers cannot afford.

Prof. Marble emphasized two points: When pullets are purchased at 16 weeks of age, the grower has to put into the bird about 60% of the feed required for profitable production. The purchaser must put in the other 40%. Second, these pullets must occupy laying quarters, which means these facilities are non-productive at least 6-7 weeks of the laying year.

Considering the purchase of pullets outright, which means considerable investment, Prof. Marble asked: "To what extent will easy credit at this point tend to create over-production in the years ahead?"

Controlled Lighting

In reporting on controlled-lighting tests at Cornell, Prof. C. E. Ostrander said that layers provided a 14-hour day out-produced others tested under varying light conditions. All birds were reared under natural conditions until 10 weeks of age, and then, by groups, given different light treatments for the laying period. All were housed in windowless pens with controlled lighting and forced-draft ventilation. Prof. Ostrander said the Cornell results on the 14-hour day still being best have been confirmed by similar tests at the University of New Hampshire.

In a session for broiler growers, Herman Canter, a producer from Woodridge, N.Y., said, "There have been more changes in the last two years than in all of the previous 20 years."

In his area of Sullivan County, he said, producing birds for meat is divided into caponettes and broilers. Caponettes are on the decline. Many farmers are changing either to growing started pullets or to egg production. Broiler growing seems to be constant, and this trend will continue in the area, and possibly the whole state, he said.

Vaccines

"The new is not always the best, the best is not always new," is true for vaccines used in controlling poultry diseases as well as for many other products, according to Dr. M. C. Peckham of Cornell's regional laboratory at Ithaca.

In general, Dr. Peckham explains, most methods of vaccination seem to be protecting flocks. They have the disadvantages over some of the older methods, however, in added expense, not always adaptable to a particular plant arrangement, and acting as repeated stresses when administered.

Discussing dual vaccines, Dr. Peckham warned that a poultryman can never be sure the reaction is from one or both vaccines, and whether a "take" has been effected by both. He urges following recommendations of the manufacturer in using a particular vaccine.

Poultry Diseases

Dr. Saul Narotsky of the East Aurora laboratory reports a rather steady decline of infectious bronchitis in western New York since 1949. He indicated that increased use of immunization procedures by area poultrymen played an effective role in reducing the number of cases.

Chronic respiratory disease has been on the increase, and New Castle and other respiratory diseases have been erratic, according to Dr. Narotsky.

Dr. Jean Hagan of the Oneonta laboratory pointed out that the number of outbreaks of infectious bronchitis have decreased in this area also. She says that she is not too concerned about the milder vaccines in the area when comparing the relative mildness of the outbreaks in partially vaccinated flocks to those in flocks having no vaccinations.

Prof. Glen Snoeyenbos of the University of Massachusetts ranks infectious synovitis as one of the major poultry diseases. He says that more research is needed to improve control methods.

Prof. Snoeyenbos indicated that as of now, there is no means of testing a flock to prove its freedom from infection, or of artificially creating immunity. He also pointed out that many drugs, including antibiotics, can suppress the disease in some cases so that poultrymen cannot recognize it.

Poultryman of the Year

New York State poultrymen for the first time divided the "Poultryman of the Year Award" between two men—Monroe C. Babcock and Robert N. Marshall, both of Ithaca.

Citations were presented by John C. Huttar of Ithaca, chairman of the State Poultry Council's awards program. The council bestows this award annually.

Mr. Huttar cited the poultrymen for the great amount of time and financial support they have given for the benefit of the poultry industry, particularly in this state and in the Northeast.

Pannier Feeder Firm Names Sales Manager

BLOOMINGTON, ILL. — Pannier Bulk Feeder, Inc., with offices at Bloomington, and a factory at McLean, Ill., has announced the appointment of Ralph W. Johnson as sales manager in charge of sales promotion and advertising.

R. W. Johnson

Mr. Johnson has had extensive sales and service experience with several major feed manufacturers in the capacity of territory manager and as trainer of salesmen.

His new responsibility will be to help establish distribution of Pannier products on a national basis.

The Pannier firm manufactures wood feeders for hogs, cattle and turkeys, the feeders ranging in size from small pen feeders up to 10-ton capacity.

BOARD CHAIRMAN

FT. LAUDERDALE, FLA.—Charles F. Kieser, formerly vice president and director of the Borden Co., is chairman of the board of a newly-formed mortgage banking corporation here, Kingway Investments, Inc.

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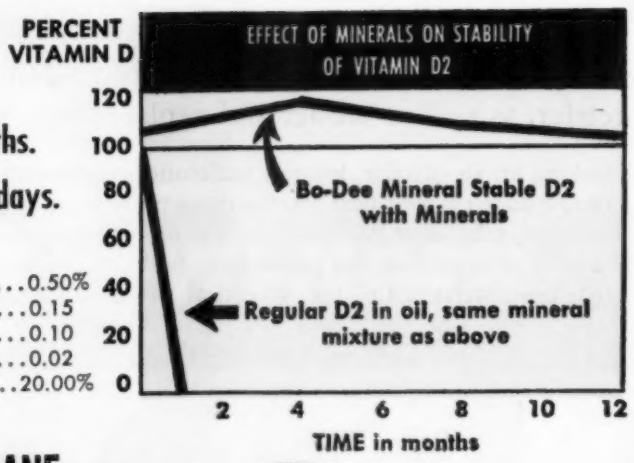

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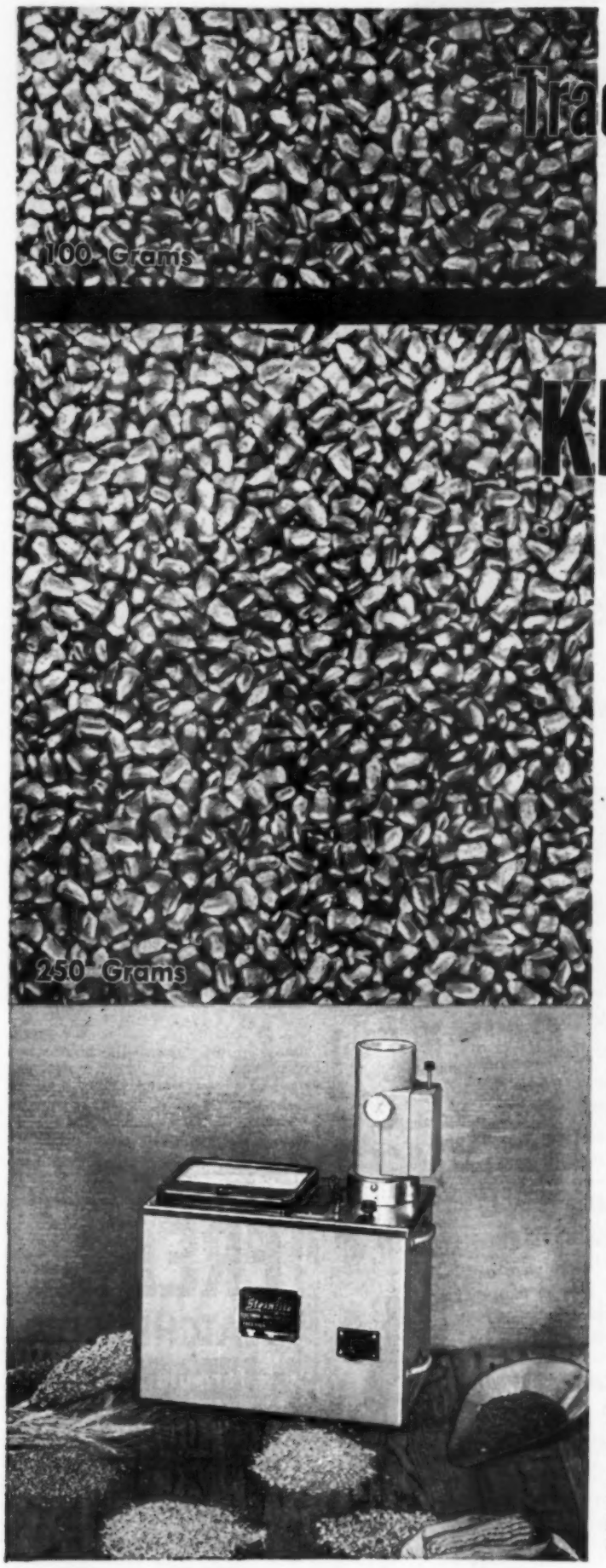

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trade up to reliable moisture testing . . . trade for the

Steinlite 500-RC

For years the standard of the grain trade, Steinlite moisture testers are more widely used than all other makes of testers combined. It didn't just happen that way . . . years of research and improvement have been invested in every Steinlite model.

And now the new 500-RC with the new king-size sample tops them all! Here's how the Steinlite 500-RC gives you more of everything you need for better moisture testing:

NEW KING-SIZE SAMPLE—Now you get a better, more representative test of the entire load with the big new 250-gram sample. Nothing to grind . . . retest the sample easily or return it to the load totally undamaged.

INSTANT ACCURACY—Make perfect tests of grain right from the drier or samples of mixed moisture content in seconds . . . no need to wait hours for moisture equalization.

FAST, EASY OPERATION—No chance for human error, you just drop the sample in the test cell, and check the automatic meter reading . . . no buttons to push, no dials to adjust. One scale for all moisture ranges.

IMPROVED FEATURES—New, large 9-inch meter . . . easy-to-read, built-in, eye-level thermometer . . . new round funnel with automatic reset . . . redesigned circuit with overlap elimination.

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EQUIPMENT COMPANY Dept. FS-8, 618 W. Jackson Blvd., Chicago 6, Ill.

Putting Research To Work

BY SPENCER H. MORRISON, PH.D., D. V. M.

Experimentally Induced Ovine Coccidiosis

● I. Use of Nitrofurasone in the Feed, R. F. Shumard, North Dakota Agricultural Station, Veterinary Medicine, Vol. 54, No. 8, pp. 421-425, August, 1959.

ABSTRACT

A total of 120 coccidia-free lambs, averaging about 70 lb. each, were randomly divided into 12 lots of five wethers and five ewe lambs each. All lambs were given a therapeutic drench of phenothiazine, followed by a four-day holding period before the experiment started. Treatment lots were duplicated and were as follows:

1a and 1b—Uninfected, no drug.

2a and 2b—Uninfected, 0.0165% nitrofurazone in feed.

3a and 3b—Infected, no drug.

4a and 4b—Infected, 0.0165% nitrofurazone in feed.

5a and 5b—Infected, 0.011% nitrofurazone in feed.

6a and 6b—Infected, 0.0055% nitrofurazone in feed.

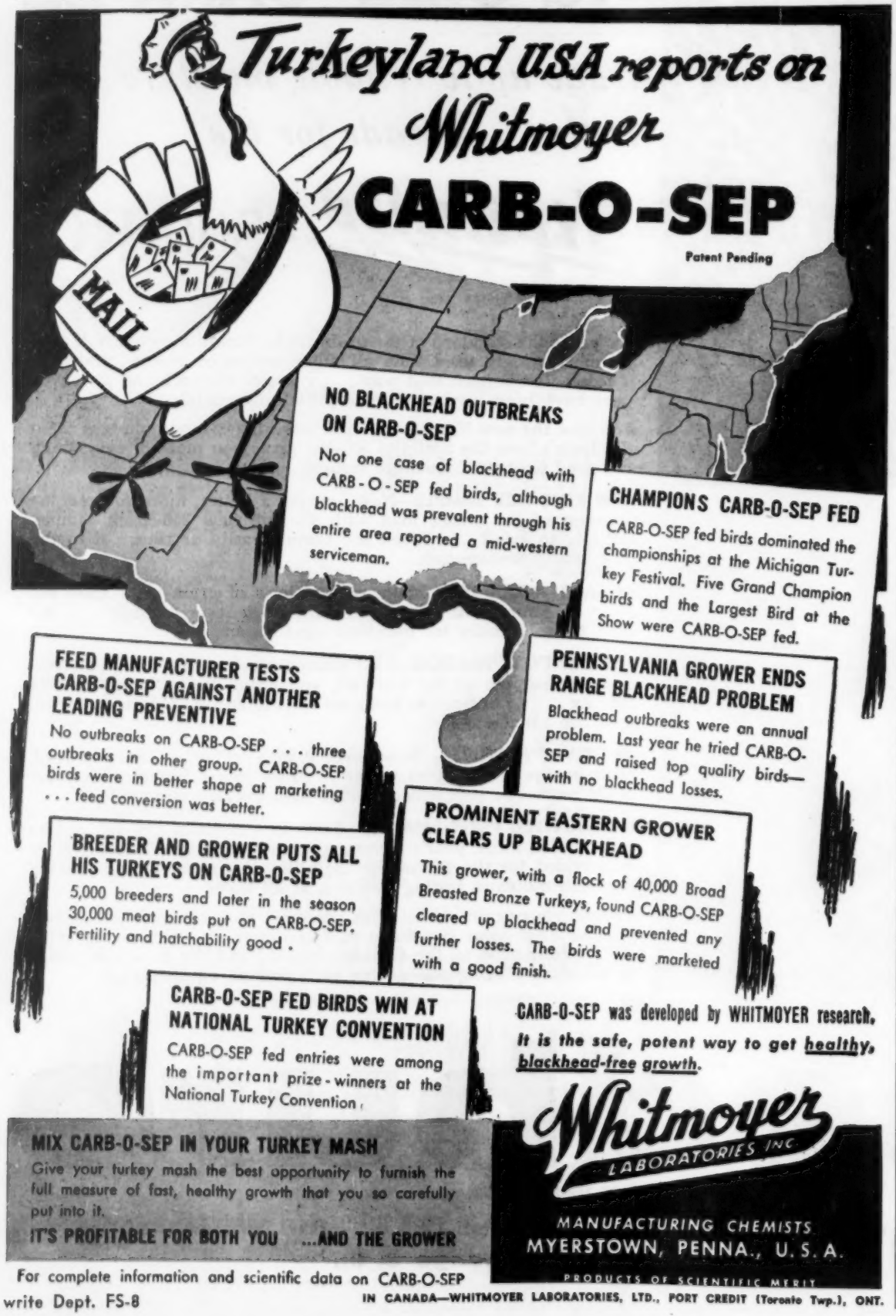
Inoculation of infected lots was by feeding a mixed infection containing one million sporulated oocysts daily for five days to each lamb. On the 35th day all lambs of replicate "a," and on the 42nd day all lambs of replicate "b," were further drenched with five million sporulated oocysts. Immunity to this challenge dose was determined by weight changes and oocyst counts. Drug (nitrofurazone) was administered in the feed only during the first 21 days of the 65-day experiment after which all lots were given the same ration. The ration fed was comprised of a pellet containing 49% ground alfalfa, 40% ground yellow corn, 10% molasses and 1% trace mineralized slat. To this was also added 4 lb. phenothiazine per ton of feed.

The results indicated that 0.0165% nitrofurazone in the feed permitted the experimental animals to withstand both the initial and challenge infections as measured by weight gain and feed consumption records. The use of the two higher levels of the drug resulted in slightly better carcass grades at slaughter than the non-treated infected group. Evidenced by oocyst production following challenge, no absolute immunity to coccidia reproduction occurred in any of the groups.

COMMENT

Although not commonly recognized as such by many people, coccidiosis can become a very serious problem in feeder lambs because of the stress and overcrowding which often occur in feedlots. Many different treatments have been tried for this condition and, unlike cattle, therapy in sheep leaves much to be desired. The sulfonamides have good therapeutic action but are quite expensive to administer on a large feedlot basis. Therefore, farmers have not taken well to such treatments.

Sulfaquanidine has been used at a prophylactic dosage of 3 gm. daily per lamb or administered in the feed at the 0.2% level. The treatment (therapeutic) level in the feed for this sulfa is 0.45%. Other sulfa drugs have also been used with some success, with sulfaquinoxaline giving somewhat poorer results. At the highest level of nitrofurazone used in this experiment—0.0165% (⅛ lb. per ton of feed)—the cost of the treatment is not excessively high when compared with the sulfa drugs now used. It is certainly worthy of inclution in the feed on an experimental basis to further evaluate its usefulness under practical conditions.


Turkeyland USA reports on
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NO BLACKHEAD OUTBREAKS ON CARB-O-SEP
Not one case of blackhead with CARB-O-SEP fed birds, although blackhead was prevalent through his entire area reported a mid-western serviceman.
CHAMPIONS CARB-O-SEP FED
CARB-O-SEP fed birds dominated the championships at the Michigan Turkey Festival. Five Grand Champion birds and the Largest Bird at the Show were CARB-O-SEP fed.
FEED MANUFACTURER TESTS CARB-O-SEP AGAINST ANOTHER LEADING PREVENTIVE
No outbreaks on CARB-O-SEP . . . three outbreaks in other group. CARB-O-SEP birds were in better shape at marketing . . . feed conversion was better.
PENNSYLVANIA GROWER ENDS RANGE BLACKHEAD PROBLEM
Blackhead outbreaks were an annual problem. Last year he tried CARB-O-SEP and raised top quality birds—with no blackhead losses.
BREEDER AND GROWER PUTS ALL HIS TURKEYS ON CARB-O-SEP
5,000 breeders and later in the season 30,000 meat birds put on CARB-O-SEP. Fertility and hatchability good.
PROMINENT EASTERN GROWER CLEARS UP BLACKHEAD
This grower, with a flock of 40,000 Broad Breasted Bronze Turkeys, found CARB-O-SEP cleared up blackhead and prevented any further losses. The birds were marketed with a good finish.
CARB-O-SEP FED BIRDS WIN AT NATIONAL TURKEY CONVENTION
CARB-O-SEP fed entries were among the important prize-winners at the National Turkey Convention.
CARB-O-SEP was developed by WHITMOYER research.
It is the safe, potent way to get healthy, blackhead-free growth.
MIX CARB-O-SEP IN YOUR TURKEY MASH
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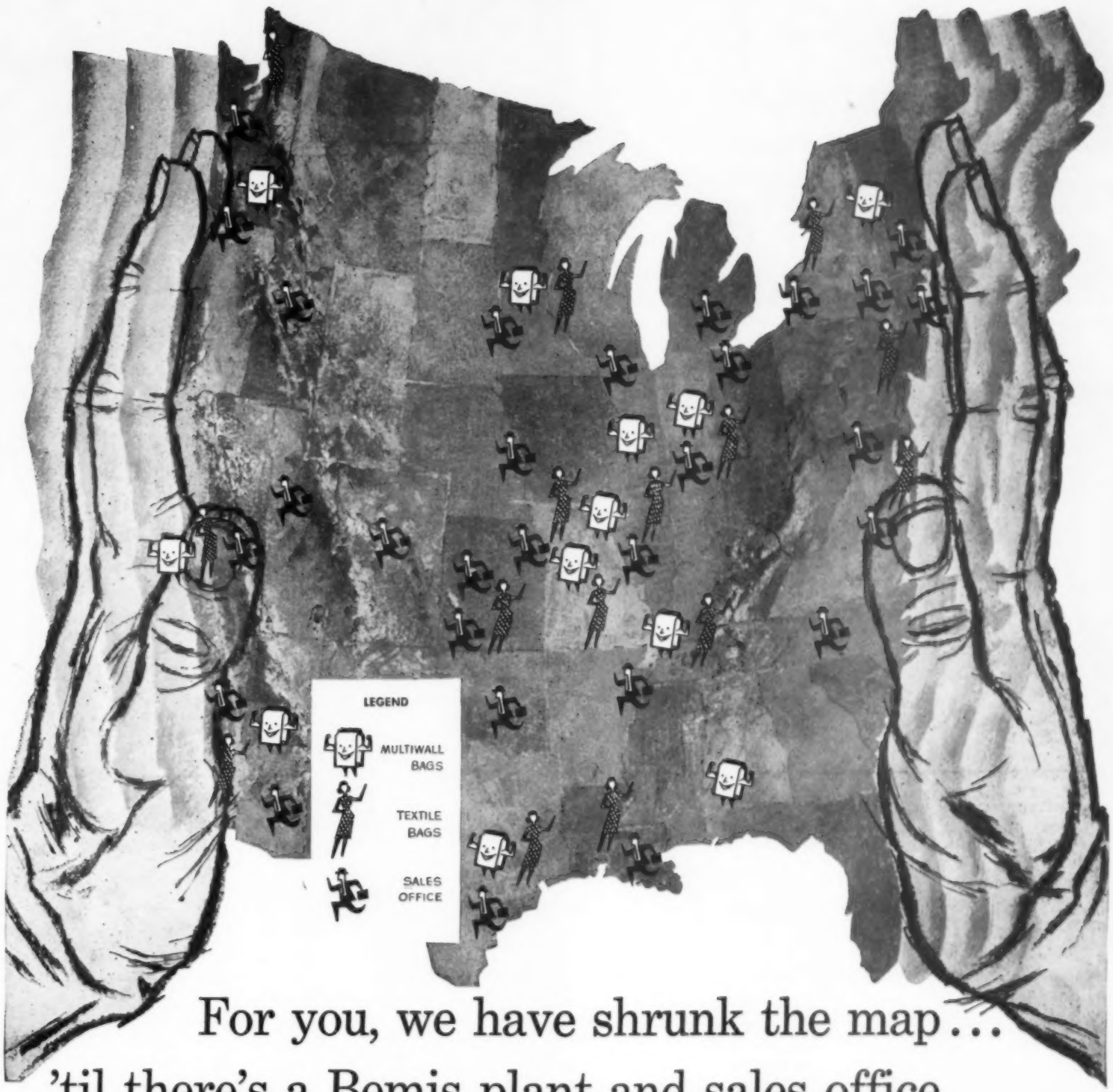

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Mixed Feed Tonnage Of 468,474 Reported In Kentucky for '58

LEXINGTON, KY. — An estimated 615,549 tons of mixed feeds and straight material were sold in Kentucky during 1958, according to a recent bulletin published by the University of Kentucky Agricultural Experiment Station.

Tonnages by class of mixed feed, totaling 468,474 tons, were reported as follows: Calf feed, 4,629; cattle feed, 11,085; dairy feed, 99,237; dog and cat feed, 10,412; horse and mule feed, 13,371; mineral feed, 5,551; pig and hog feed, 84,899; poultry mashes, 193,150; rabbit feed, 1,683; scratch feed, 14,318; sheep feed, 1,622; stock feed, 3,733; turkey mashes, 11,021 and miscellaneous mixed feed, 13,763.

The report listed the tonnage of straight material sold at 147,075.

● NEW DAFFIN ROUGHAGE-IZER* SHOWN AT WORK

MONEY-MAKING ADVANTAGES MAKE A DAFFIN WORTH THE DIFFERENCE!

MEN buying mobile mills decide on "a Daffin" so much more frequently, it's obvious they prefer the Feedmobile's many money-making advantages. Here are just a few Daffin "PLUS" features:

★ Roughage-izer that feeds better than 4 bales of hay a minute right into mill; no need to cut twine!

★ Daffin Air Conveyor System lifts finished feed to storage as high as 80 feet.

★ Optional 2-way vacuum pick-up, pressure discharge system to automatically draw grain from bins and speed finished feed to storage.

★ Heavy-duty Hammermill built of ½" plate steel, equipped with special alloy steel shaft, self-aligning ball bearings.

★ Electronic Feed Table Control for raising, lowering and changing feed table speed.

★ Unequalled Molasses Blending System integrated with Precision Multi-Action Mixer for accuracy.

★ Full-power economy of new 120 H.P. GM Diesel Power Unit to get the job done fast!

★ PLUS a host of advantages such as Sales Training School, valuable merchandising help and network of Service Depots.

Remember, Daffin IS Mobile Milling. IN MOBILE MILLS, as in most things, it PAYS to invest in THE BEST! Write for details TODAY on the complete DAFFIN PLAN FOR PROFIT!

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Builders of the World-Famous Daffin Packaged Feed Plants, Pneumatic Conveying Systems, Pelleting Machines, Batch Mixers

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DAFFIN MANUFACTURING COMPANY, 3288 NORTH PRINCE STREET, LANCASTER, PENNSYLVANIA

Little pay check, by tonight
We'll be where the lights are bright
In some gay and festive spot—
I'll return, but you will not.

◆ ◆ ◆

Chilled by a breeze through the Pullman car, the young woman in the upper berth attracted the attention of the man in the lower berth.

"Will you get me a blanket?" she demurely requested. "I'm cold."

"Are you married?" the man asked.

"No, I'm not married," the girl replied.

"How would you like to play that you were married?' he enquired.

"Oh! I think that would be fun."

"Then go get your own blanket."

◆ ◆ ◆

Women are to blame for most of the lying which men do. They insist on asking questions!

◆ ◆ ◆

Fortune Teller: "Prepare yourself —your husband is about to die a violent death."

Wifey: "Will I be acquitted?"

◆ ◆ ◆

Don't tell your friends about your indigestion: "How are you!" is a Greeting, not a Question.

◆ ◆ ◆

An angry little man bounced into the postmaster's office. "For some time now," he shouted, "I've been receiving threatening letters, and I want something done about it!"

"I'm sure we can help," soothed the postmaster. "That's a federal offense. Have you any idea who is sending you the letters?"

"Indeed I have!" snapped the little man. "They are all coming from those income tax people."

◆ ◆ ◆

Kissing is just so much chemistry. It has to do with a craving for salt. The cave man found that salt helped cool him off in the summer. He found, too, that he could get salt by licking his neighbor's cheek. Also that it was more interesting if the neighbor was of the opposite sex.

Then everybody forgot about salt.

YOU CAN TELL...

she's had her
CAFNECTAR
this morning

Cafnectar fortifies milk replacers and calf starter formulas with the sweet milk flavor calves love. Write for sample and information.

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IF

IF you keep records

IF you compare weight and feed efficiency of broilers based on Nichols 108 mothers with broilers based on White Rock mothers

IF you make split house tests under *commercial* conditions

IF you have your processor check the *extra* ½% to 1% of salable meat on a chilled yield basis

YOU'LL JOIN THE SWING TO BROILERS BASED ON NICHOLS 108S.

We'll gladly help you to set up records, comparisons, tests so you can prove the facts for yourself. Ask one of our representatives or contact us direct.

RESEARCH MAKES THEM BETTER
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Nichols Incorporated

Exeter, New Hampshire

Feed Service BULLETIN BOARD

IDEAS TO HELP YOUR CUSTOMERS

Anaplasmosis in Cattle

Twice-daily checking of their herds during the summer and fall months for symptoms of anaplasmosis is recommended to cattlemen and dairymen by Louisiana State University Agricultural Extension Service.

Early identification of this frequently fatal disease is important because its treatment is seldom effective unless it is begun promptly. Affected animals lie down and stay apart from the herd. Other early symptoms are decline in milk production, loss of appetite and anemia. Later symptoms include high fever, rapid breathing and pulse, complete loss of appetite, pale mucous membranes, depression, muscular weakness, trembling, constipation, jaundice, dry muzzle and shrinking tissue.

Louisiana State veterinarians say treatment of anaplasmosis in its early stages with Aureomycin, Terramycin or Achromycin placed in the blood stream usually is effective. Chances of recovery are increased when supportive treatments accompany the antibiotics. These treatments include giving blood transfusions, enemas, stimulants and dextrose and saline solutions.

Sick animals should be protected from insects, sun, cold wind and rain, but should not be moved unless absolutely necessary. The reduced number of red blood cells makes it impossible for the blood to carry enough oxygen to the tissues, so animals often die of suffocation when they are handled or become excited. Infected animals need plenty of food and fresh water.

◆

Sheep Roundworms

Research at the University of Illinois shows that farmers can't depend on pasture rotation to control stomach worms and other roundworms in sheep. It's been found that microscopic larvae of stomach worms live longer on the ground than was previously supposed—therefore, says Dr. Norman D. Levine, college of veterinary medicine, medical treatment of sheep still is necessary to help control roundworms.

Dr. Levine recommends phenothiazine as effective in expelling adult worms and in keeping egg production to a minimum. Phenothiazine may also be used to help prevent roundworm infestion.

◆

"Herringbone" Milking

Labor efficiency in the milking parlor is being improved with the "herringbone" arrangement.

Cooperative studies of the U.S. Department of Agriculture and the University of Minnesota show that the "double-four" herringbone milking parlor is the best arrangement for the average one-man dairy operation. And Purdue University reports that data collected on observations of the operation of 14 herringbone parlors in Indiana and other midwestern states indicates that labor efficiency of a one-sided herringbone layout is, at best, about 80% of a two-sided layout.

The comparatively new herringbone layout is a walk-through, two-level parlor, with the cows facing outward at an angle and standing about 30 inches higher than the operator's floor level. The arrangement permits cows to be milked in batches and one milking unit is placed between two stalls.

Russell E. Larson, USDA Agricultural Research Service, says the double-four parlor, which handles eight cows at a time, gives the operator sufficient time to do all the necessary work and allows time for normal delays. Through increased skill and experience some operators are able to handle a double-five, so there is merit in thinking about making provision for the fifth position when building a milking parlor.

The Purdue investigations show that one man can handle four milking units in a two-sided parlor and milk up to 50 cows an hour. The addition of a second man to a six-unit parlor greatly decreases the output per man, but may increase the rate of milking up to 50%.

◆

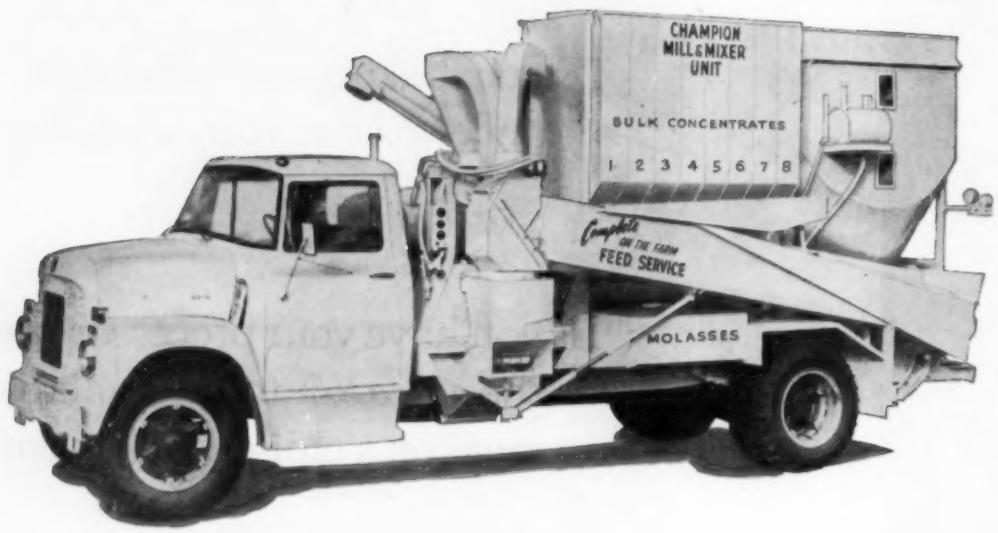
Diseases and Eggs

Two virus diseases, bronchitis and Newcastle, cause by far the greatest injury to egg quality, and the extent of this injury depends upon the virulence of the agent and the stage of production of the laying hen, said Prof. G. J. Cottier, poultry husbandry department, Alabama Polytechnic Institute, at the recent egg quality school conducted by the Southeastern Poultry & Egg Assn.

These two viruses, he said, affect thickness and condition of egg shell, size and shape of the egg, size and movement of the air cell, color of

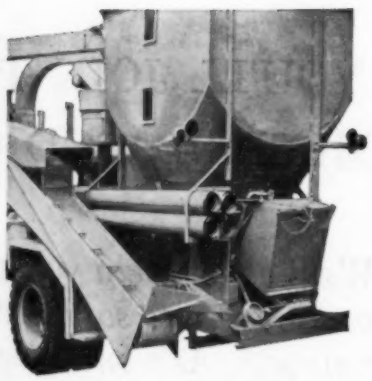
CHAMPION

MOBILE MILL EQUIPMENT



New carrier hauls 8 separate batches of bulk concentrates!

Here's another reason why CHAMPION is your best buy. This new bulk concentrate carrier, produced as regular equipment on Champion mobile mill and mixer units, holds 2½ tons of concentrates in bulk form. The carrier is divided into eight separate compartments, with each compartment having a capacity for 600 lbs. of concentrates. The Champion owner can now pre-weigh bulk concentrates for nine individual batches of feed before leaving his plant—haul a batch in each of the carrier's eight separate compartments—and one batch in the unit's mixer. During feed processing, a screw conveyor feeds the concentrate into the mixer from a selection of any one or more of the compartments. In addition to the bulk carrier, there is ample space on the unit for hauling one more full ton of bagged concentrates. With a Champion you get more for your money, because fast and accurate grinding action, plus the larger 2- to 3-ton mixing capacity, processes a high tonnage of top-quality formula feed at a lower cost per ton, than do units of lesser volume. Champions are built with more capacity, more labor-saving features, and more dependable performance—to provide more and better ON-THE-FARM service. Write for full information.



Air unloading system

Now available on all Champions—the industry's finest, cleanest air system ever installed on any mill and mixer unit. By furnishing both air system and/or auger discharge, Champion units provide complete unloading convenience.

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"If Gooch recommends a feeding program they've proved it works. As a dealer, knowing my customers will get results helps me sell feed."

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Council Bluffs, Iowa

Fit the protection to the problem— with versatile, unmatched nf-180

Nothing protects turkeys during the critical growing-finishing period like nf-180. It prevents and controls more turkey diseases than any other drug. The comparison chart below proves it.

With nf-180 you can tailor medicated feeds to fit your needs. Here are three methods in widespread use:

Two-pound level (.011% furazolidone) — fed continuously to help protect against blackhead, hexamitiasis, and other diseases.

One-pound level (.0055% furazolidone) — fed continuously for wide protection against stress-caused troubles and many diseases, except where blackhead and hexamitiasis are problems.

Week-a-month plan — for areas where disease is not as serious. You feed nf-180 at a 2-lb. (.011% furazolidone) level one week a month to help clean up birds, fight stresses, and knock out disease organisms before they cause trouble.

In addition, all three plans help improve feed conversion, step-up growth, and eliminate sub-clinical infections. Buildup of resistant organisms has never been a problem with nf-180—no unwanted side effects because nf-180 is non-toxic.

Why settle for less than nf-180 protection? Review your turkey disease problems, then set up the nf-180 program which will fit your needs. For complete details on nf-180, talk with your Hess & Clark representative, or write, wire, or call for the Turkey Feed Medication Kit to Feed Products Manager, Hess & Clark, Ashland, Ohio.

NT-9-2

Compare nf-180 (furazolidone) with other turkey feed medications

DRUG	Growth Stimulation	Typhoid	Pullorum	Paracolon	Paratyphoid	C. R. D. Sinusitis	Blue Comb	Hexamitiasis	Synovitis	Ulcerative Enteritis	Blackhead	Stress periods
*nf-180 (furazolidone)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Chlortetracycline	YES	NO	NO	NO	NO	YES	YES	YES	YES	NO	NO	YES
Oxytetracycline	YES	NO	NO	NO	NO	YES	YES	YES	YES	NO	NO	YES
Bacitracin	YES	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	YES
Penicillin and Streptomycin	YES	NO	NO	NO	NO	YES	YES	YES	NO	NO	NO	NO
Pencillin	YES	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	NO
12½ Penicillin plus 37½ Bacitracin	YES	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	YES
Erythromycin Stearate	NO	NO	NO	NO	NO	P-? T-YES	P-? T-YES	NO	P-? T-YES	NO	NO	NO
2—Acetylamino 5—Nitrothiazole	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	P-YES T-YES	NO
4—Nitrophenyl. Arsonic Acid	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	P-YES T-NO	NO
A Sulfa—Tin—Arsenical Comb.	YES	P-? T-NO	P-? T-NO	NO	NO	NO	P-YES T-NO	P-YES T-NO	NO	NO	NO	NO

KEY — P: Prevention T: Treatment *Each pound of nf-180 contains 50 grams of furazolidone

nf-180®
brand of
furazolidone

"No wonder we can't turn out the feed dad did in his day—he takes up our time telling us about it!"

brown eggs and albumen quality. Bronchitis usually affects egg quality over a longer period of time than other diseases. Both diseases can be prevented by vaccination.

Prof. Cottier noted that in a few outbreaks of chronic respiratory disease (CRD) shell texture and egg color have been affected. A severe outbreak of coccidiosis may result in decreased shell thickness which later is followed by an increase in thickness of the shell. Infectious hepatitis has been found, in a few cases, to cause a loss in albumen quality.

Some bacteria will affect internal egg quality and are chiefly responsible for the green, black and red rots found in eggs. Laying hens drinking water heavily contaminated with pathogenic bacteria may result in an increase of blood spots and clots in eggs.

Fish flavor of eggs is due to a condition of the ovary, Prof. Cottier said.

He explained that penicillium rubrum is a toxic mold which causes hemorrhagic conditions in cattle, swine and chickens, and said it seemed possible that if laying hens ate this toxic mold it could cause bloody eggs.

Some of the sulfa drugs which are used in treating chickens in outbreaks of bacterial diseases may affect shell pigment, shell thickness and cause irregularities in and on the surface of egg shells. Nicarbazine, a coccidiostat, will affect shell pigment and mottling of the yolk when fed to layers for more than two days.

◆

Egg Gathering

How often should eggs be gathered? If this question were asked of Dewey McNiece, extension poultryman, University of Georgia, he'd answer: Certainly a poultryman should gather at least twice and probably three times by 11 a.m. The final gathering might be made later in the day, depending upon the temperature and the work schedule.

This advice comes from a six-month test in which eggs were gathered five times daily. It was readily apparent that a gathering as early as 7 a.m. would result in over one fifth of the eggs being picked up.

Named Official of Iowa Grain and Feed Group

DES MOINES, IOWA—Kenneth L. Ludlow has been appointed assistant secretary of the Western Grain & Feed Assn. of Iowa, according to an announcement by Robert B. Couch, president of the association. The appointment will become effective Aug. 1, 1959.

K. L. Ludlow

Mr. Ludlow has been employed for the past six years in the grain department of the Farmers Grain Dealers Assn. of Iowa. For the last three years he has been assistant manager of the truck grain section.

The new assistant secretary spent 4 years in the U.S. Marine Corps during World War II and was graduated from Drake University in 1953.

Cyanamid Announces Ag Staff Appointment

NEW YORK—Frederick E. McCormick has been appointed manager of commercial development for American Cyanamid Co.'s agricultural division, according to B. F. Bowman, division marketing director.

F. E. McCormick

Previously manager of market research for the division, Mr. McCormick has been with Cyanamid since 1957.

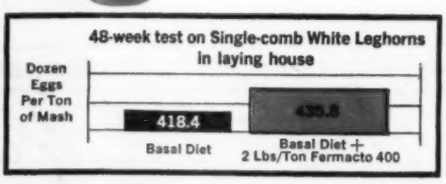
He is a graduate of the Baruch School of Business Adm., and a candidate for a master's degree in general management at Columbia University.

He is a member of the American Marketing Assn. and of Beta Gamma Sigma, national scholastic honor fraternity for business administration graduates.

EARNINGS REPORTED

NEW YORK—Commercial Solvents Corp. reports for the quarter ended June 30, 1959, consolidated net earnings of $701,632, equal to 26¢ a share on 2,741,422 shares of common stock. Sales for the quarter were $16,686,951. Consolidated net earnings for the six months ended June 30, 1959, were $1,367,312, equal to 50¢ a share. Sales for the six months were $32,474,357.

Two bits can get your customers 17 extra dozen... that's all it costs to fortify 1 ton of mash with fermacto 400 the unique blend of multiple fermentation factors for complete ugf fortification. Here's proof...


48-week test on Single-comb White Leghorns in laying house
Dozen Eggs Per Ton of Mash
418.4
435.8
Basal Diet
Basal Diet + 2 Lbs/Ton Fermacto 400

And for economical production without *over-fortification* try *Borden's* 300 the balanced laying mash supplement containing fermacto 400 and all essential micronutrients at about $1.25 per ton on an all-mash basis. For *custom* blended micronutrients, too, contact your *Borden's* field man.

For complete price schedules and information contact

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Program Set For Texas Conference

COLLEGE STATION, TEXAS — The 1959 Texas Nutrition Conference will be held Oct. 7-9 in the ballroom of the Memorial Student Center, Texas A & M College, College Station, according to a recent announcement by Dr. J. R. Couch, conference chairman.

The conference is sponsored jointly by several college departments, the Texas Agricultural Experiment Station and the Texas Agricultural Extension Service, College Station, in cooperation with the Texas Feed & Grain Assn., Fort Worth.

Dr. Couch says the program is designed to cover the fields of poultry and animal nutrition. In addition, new developments such as new feed additive laws, the present status of coccidiostats and other subjects of current interest to the industry will be discussed.

There will be a ladies luncheon Oct. 8, for those who wish to accompany their husbands to the meeting.

A tentative program for Oct. 7 includes a report from the Texas Feed & Grain Assn. by Walter Blanton and talks on "Feed Additives Under the New Food Additive Law," Dr. K. B. Kerr; "The Present Status of Cottonseed Meal as a Feed Supplement," Dr. R. A. Phelps; "The Present Status of Coccidiostats," Dr. D. F. Green; "The Present Status of Unidentified Growth Factors," Dr. Couch; "Fats in Poultry Nutrition, with Emphasis on Some Special Properties," Dr. F. W. Hill, and "Aplastic Anemia," Dr. L. M. Reedy.

Scheduled for Oct. 8 are talks by Dr. N. L. Jacobson, "Cause and Prevention of Bloat in Cattle;" Dr. Orville Bentley, "A Review of Progress in Ruminant Nutrition;" Dr. L. S. Pope, "Effect of Level of Wintering on the Performance of Range Beef Cows;" Dr. I. L. Lindahl on the subject of pellets, and Dr. H. O. Kunkel, "Urinary Calculi."

Afternoon discussions will include: Dr. J. H. Quisenberry, "The Effect of Various Rearing Programs on Subsequent Performance of Laying Strain Replacement Stock;" Dr. M. W. Pasvogel, "Factors Affecting Egg Shell Quality;" Dr. F. W. Hill, "Energy Values of Feedstuffs and the Energy Nutrition of Poultry;" Dr. A. I. Flowers, "The Relation of Nutrition to the Vaccination Program in Chickens and Turkeys;" and Dr. G. B. Belloff, "Resperine in Poultry Nutrition."

Topics of discussion Oct. 9, will include: "Meeting the Real Nutritive Needs of Dairy Cattle," Dr. N. L. Jacobson; "The Effect of Pelleting Grains and Rations Varying in Proportion of Concentrate-to-Roughage for Beef Cattle," Dr. L. S. Pope; "The Nutritional Requirements of the Rumen Microorganisms," Dr. Orville Bentley; "Pigmentation of Broilers," W. P. Williams, Jr., and "Evaluation of Fats of Different Origins in Poultry Feed Formulations," Dr. R. E. Davies.

Cyanamid Plans Four Promotions

NEW YORK — Four animal health product promotions are being made available to feed and drug dealers by American Cyanamid Co., New York.

Starting Aug. 24 and continuing through Oct. 31, a sampling program on Aureomycin Crumbles will be offered to farmers by dealers.

Another promotion, to start Sept. 15, is designed to help dealers sell Aureomycin Soluble Powder. Participating dealers will be able to offer their customers a free one quarter pound jar with every one half pound jar purchased.

A third program is built around Sulmet sulfamethazine. Free packages are given with the purchase of prescribed quantities of Sulmet.

Cyanamid is making it possible for dealers to offer dairymen a free package of Aureomycin mastitis ointment with the purchase of five packages.

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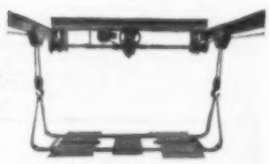

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Merchandising Contest Won by Feed Dealer

NEW YORK—George E. Bugbee, assistant general manager of the Osborne McMillan Elevator Co. at Alexandria, Minn., has won the national dealer merchandising contest sponsored by Chas. Pfizer & Co., Inc., New York. He will be given a week long, expense-free vacation in Acapulco, Mexico, this fall.

Mr. Bugbee took first prize in the Terramycin egg formula contest open to all retailers of animal health products.

Second prize in the contest went to an Estherville, Iowa, pharmacist, Don J. Hoye. He has won a 21-in. color television set, plus a year's free service for it.

Roy Fahey, a hatchery operator at Raymond, S.D., placed third. He and his family will receive an 8-mm motion picture combination that serves as both camera and projector.

In addition, 63 other animal health product retailers in 23 states have won pocket transistor radios as regional prizes.

The contest was open to any retailer who purchased Terramycin egg formula and submitted an entry explaining his method of merchandising it. The product is a combination of antibiotic and vitamins for use in poultry drinking water.

Joins Iowa Firm

MARSHALLTOWN, IOWA—Russ Bagnall, president of the Arbie Mineral Feed Co., Marshalltown, announced that Clyde Andrist has joined the firm as head of its sales department. Mr. Andrist recently moved to Marshalltown from Casper, Wyo. He has been in sales work for the last 15 years, five of which have been in the feed business.

Court Orders 'Lawful' Ex-Barge Grain Rates In Alabama Decision

BIRMINGHAM, ALA.—Three U.S. District Court judges here have ordered the Interstate Commerce Commission to establish "lawful, reasonable and non-discriminatory" ex-barge rates on grain and grain products from Tennessee River ports to destinations in southern territories.

The decision was the result of action brought by Arrow Transportation Co. and 16 other plaintiffs to set aside orders of the commission in proceedings filed by the American Barge Line Co. against the Alabama Great Southern Railroad and involving railroad rates on grain which had first been shipped by boat to the Tennessee River ports of Sheffield, Decatur, Guntersville, Chattanooga and Knoxville.

The three judges' decision was remanded to the ICC for further proceedings in accordance with the opinion of the court.

In their written opinion, they said: "Under the existing rate structure the railroads charge their full local rates for transhipment by rail or ex-barge grain from the Tennessee River ports while affording more favorable treatment to ex-rail grain transshipped from those ports, and also to ex-barge grain transshipped from the competing port of Memphis."

The judges said the rate structure does not recognize and preserve the inherent advantages of barge transportation as required by the national transportation policy and is contrary to the requirements of various sections of the Interstate Commerce Act.

The original complaint was filed with the ICC in January of 1951.

The plaintiffs had complained of two types of discrimination— discrimination in favor of the inbound railroads and discrimination in favor of a barge-rail movement through the competing port of Memphis.

Benson to Speak At Swine Conference

GRUNDY CENTER, IOWA — Ezra T. Benson, secretary of agriculture, will speak at the second annual National Swine Industry Conference which opens Nov. 19 at Iowa State University, Ames.

Keith Myers, executive secretary of the National Swine Growers Council and conference chairman, said Mr. Benson has accepted an invitation to speak at the noon luncheon on the opening day of the two-day meeting.

The National Swine Conference is an industry-wide meeting of leaders of all segments of the business of putting pork on the nation's tables. It is designed to bring together all the best thinking in the industry for discussion of swine problems and their solutions, Mr. Myers said.

The first conference last year at Purdue University was sponsored by 23 trade and professional groups, general farm and swine producer organizations. J. Russell Ives of the American Meat Institute, Chicago, secretary of the conference, said sponsorship of this year's meeting will include an even broader cross section of groups allied to swine production, processing and marketing.

The preliminary conference program calls for general sessions and talks on swine production and marketing during the morning of Nov. 19, highlighted by Mr. Benson's talk at noon.

During the afternoon the conference will break up into eight workshop sessions which will be continued in the evening. The workshop sessions will provide for open discussion on breeding and reproduction, nutrition, housing and equipment, management systems, disease control, marketing of live hogs, pork processing and merchandising and quality goals in pork.

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UP OR DOWN

By Dr. Leonard W. Schruben, Agricultural Economist, Kansas State College

Corn Crop Prospects

We are headed for another record corn crop this year. Despite increased feeding, there will be enough feed grain. The price of corn will again be dominated by government supports. Other feed grains will seek markets outside government loan.

The first official report of the condition of the 1959 corn crop and prospective harvest was released July 10. A crop of 4,225 million bushels was indicated in this report. This would be a new record. Last year also was a record when 3,800 million bushels were produced.

How big is a corn crop of 4¼ billion bushels? You can get some idea as to how the size of this crop compares to the previous crop by looking at Exhibit 1. In this exhibit we have shown the production of corn since 1930. Look how production has been going up.

The number of acres in corn took a sharp increase this year up to 84.4 million acres compared to 73.5 million in 1958. This is in response, in part, to the relaxation of acreage control although allotments have not been followed on the majority of the farms the previous year. It also reflects a relatively more favorable price prospect compared to competing crops for the use of land.

It is still early in the season and a lot of changes could take place in the size of the crop. No one can tell in July whether or not there will be hot wind and crop losses during August. Because there is the possibility of crop conditions changing during the growing season we have prepared Exhibit 2. This exhibit shows a comparison between the official estimates for production made at the beginning of each month, July through November, with the final year's estimate as of Dec. 1.

Here is how to read Exhibit 2: Let's consider the July 1 corn crop estimate. You will notice in the July column there is a dot at the plus 200 level. The dot at the 200 level indicates that in one of the years the July estimate was 200 million bushels above the December estimate. A dot at the minus 190 level would indicate that the July estimate turned out to be 190 million bushels below the December estimate. Each dot represents one of the years from 1920 to the present time.

You will notice as the season progresses the dots tend to cluster more nearly around the zero line. The shaded area indicates half of the dots. As you can see, half of the changes from the July estimate have been in the 200 million bushel range. This gives you an idea that actual harvest could range from 4 to 4.4 billion bushels depending on weather patterns.

What does this mean in terms of price prospects? It means that there will likely be plenty of corn even though livestock feeding has increased. You can expect continued downward pressure on prices with price supports being an important price factor despite prospects for smaller outturns of other feed grain crops.

EXHIBIT 1. Corn production in the U.S., 1930-58 with an estimate for 1959

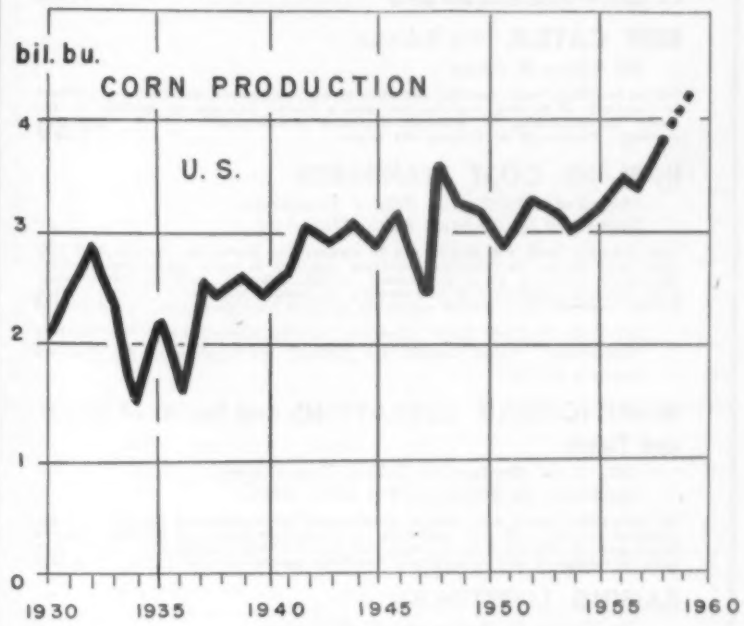
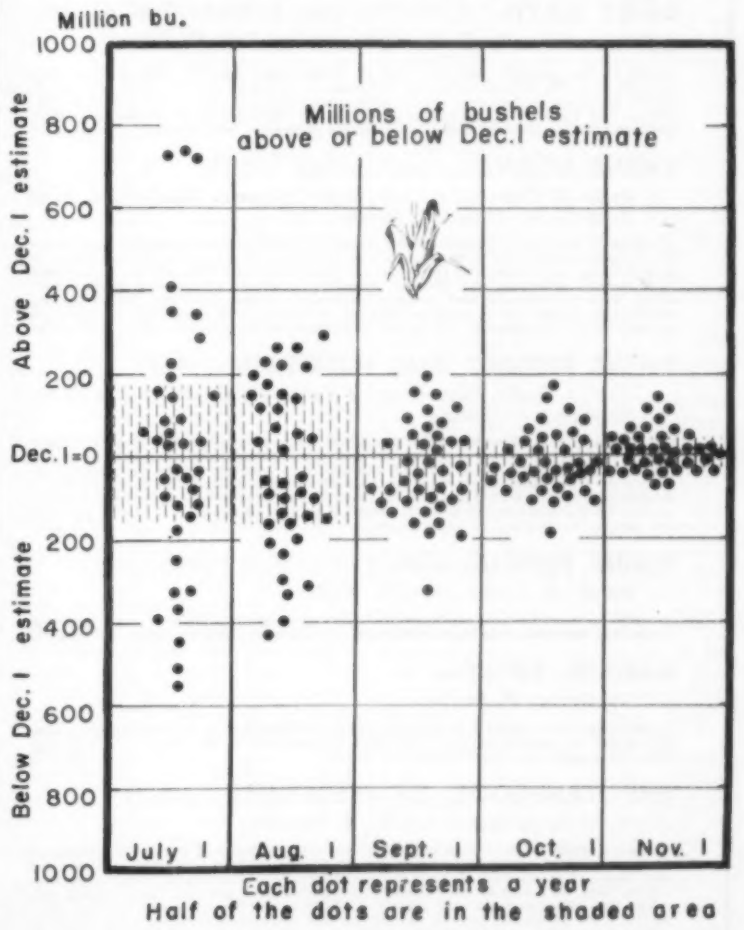


EXHIBIT 2. Early season corn production estimates compared to December estimate



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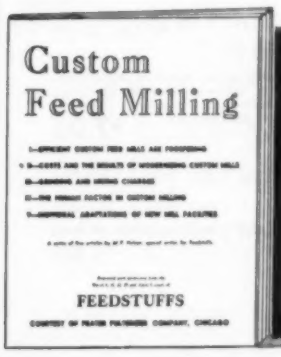

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EGG PROMOTION—Chosen to spearhead the second annual "EGGtober" egg promotion sponsored by Chas. Pfizer & Co., Inc., New York, is Adele Leonard, Livingston, N. J. She will appear at poultry trade shows and on radio and television to urge consumers to eat more eggs.

Pfizer to Sponsor Second 'EGGtober' Egg Promotion

NEW YORK—The second annual "EGGtober" egg promotion will be sponsored again this year by Chas. Pfizer & Co., Inc., New York.

Major emphasis will be directed toward the consumer, with the express purpose of promoting greater egg consumption. "With the market in ample supply, we believe these programs will help to sell more eggs and focus attention on this nutritious product of the poultry industry," a Pfizer spokesman said.

Chosen as "Miss EGGtober for 1959" is Adele Leonard, Livingston, N. J. She has had a highly successful career in 4-H club work, and while she lives in an urban community, she is headed for a career in farm operation. Miss Leonard has taken a short course in animal husbandry at Rutgers University, and plans to take more extensive work in animal husbandry before she and her father begin operating a farm together.

In announcing the selection of Miss Leonard as "Miss EGGtober," Hugh O. Dermody, assistant general manager of the Pfizer Agricultural division, stated that to poultrymen she will be promoting "EGGtober" as "America's Extra Egg Month." He added that this is the extra month of production that they will receive through wise poultry management and the use of scientifically blended feeds.

Miss Leonard will appear at poultry trade shows and on radio and television to urge consumers to eat more eggs.

'Happy Egg'

Another part of the "EGGtober" promotion will be "Happy Egg" an egg caricature that will be used on billboards throughout the U.S., and on counter cards, price posters and window streamers in more than 5,000 food supermarkets as they feature special egg sales.

Some of the consumer activities planned in support of "EGGtober" are as follows:

"1. Poultry & Egg National Board will promote 'EGGtober' as its major program this fall in support of eggs. They have inaugurated an impressive campaign directed toward radio, television and newspaper food editors, magazines, home demonstration leaders, food stores, restaurants and other groups.

"2. 'EGGtober' will be featured during the peak of the program in September and October in over 5,000 super food markets. Such chains as National Tea, Red Owl, First National, Colonial Stores, Acme Markets, Food Basket, and others will feature special 'EGGtober' sales with banners, counter cards and window streamers.

"3. The Rural Gravure will print a special EGGtober edition that will appear in over 200 leading weekly newspapers throughout the Midwest. Special poultry editorial recipes for the housewife and tie-in advertising by companies engaged in the poultry industry will be features of this edition.

"4. Over 7,500 weekly newspapers will receive a special letter, suggested 'EGGtober' ad mat and information on the nation-wide program."

Pfizer will supply to home demonstration agents special kits, recordings to radio stations, plastic EGGtober aprons for use at cooking schools, radio and television announcements and other advertising.

Soybean Group Sees 535 Million-Bu. Crop

CHICAGO—An estimated soybean crop for 1959 of more than 535 million bu. was predicted this week by the National Soybean Crop Improvement Council. (This estimate is considerably higher than the 480 million-bu. crop forecast in an Aug. 1 Feedstuffs Washington report based on U.S. Department of Agriculture figures.)

Soybean production last year was 574,413,000 bu.

Ward Calland, managing director, National Soybean Crop Improvement Council, commented that the weather for the first three weeks of August will make or break the soybean crop. In a report based on Aug. 1 conditions, Mr. Calland said, "The potential is there . . . for a good yield. Subsoil moisture is short in some areas so good rains will be needed. There has been no serious insect or disease problem to date."

Midwest, South Molasses Weaker

NEW ORLEANS — Markets for feeding cane molasses were weaker throughout the Midwest and South during the week ended Aug. 4, the New Orleans office of the Agricultural Marketing Service reported.

Demand continued slow to moderate or near normal for this season of the year, with the primary reason for market weakness appearing to be pressure on selling to relieve a fully adequate supply situation.

Prices at New Orleans were one fourth cent lower at mostly 11¢ gal. Weakness was more pronounced in the Southeast. Prices in the Savannah-Wilmington area declined one half to one cent per gallon. Florida prices were unchanged to one half cent per gallon lower.

Molasses markets at Texas ports were slightly weaker with prices unchanged to one fourth cent below a week ago. Throughout Midwest feed mixing centers prices were mostly one fourth cent per gallon lower. In the Northeast, demand was good at unchanged prices. West Coast markets held steady with no price change.

AMS said Puerto Rican producers sold to local distributors about 25,000 gallons of cane blackstrap, 89° Brix, at 11¢ gal., gross price at port.

Cuban blackstrap molasses production from the 1959 sugar cane crop reached 306,161,286 gal. as of July 15, according to the Cuban Sugar Stabilization Institute. Last year by July 15, production of blackstrap from the 1958 cane crop had amounted to 230,684,742 gal. This year's production of blackstrap is almost complete as 159 of the 161 cane grinding plants have finished operations for this season.

NEW MEMBERS

TOLEDO, OHIO—The addition of two members to the Toledo Board of Trade was reported recently by A. E. Schultz, secretary. The new members are C. R. Busler, Jr., of P. R. Markley, Inc., and Clayton W. Johnson of Mid-States Terminals, Inc. Both firms recently opened Toledo offices in the Board of Trade Building.

Farm Commodity-Feed Price Ratios

	U.S.	New Eng.	Mid-Atl.	East North Cent.	West North Cent.	South Atl.	East South Cent.	West South Cent.	Mount.	Pac.
CHICKEN-FEED—										
Farm Chickens:										
July, 1959	3.1	3.5	4.1	3.3	2.4	3.5	3.4	3.2	3.3	2.7
June, 1959	3.0	3.1	3.5	3.1	2.4	3.5	3.4	2.9	3.5	2.3
July, 1958	4.3	4.5	4.9	4.5	4.2	4.1	4.1	4.0	4.3	4.0
Average (1948-57)	5.7									
Average (July, 1948-57)	5.6									
Broilers:										
July, 1959	3.3	3.5	4.2	3.7	3.5	3.2	3.1	3.2	3.6	3.7
June, 1959	3.2	3.3	3.9	3.6	3.4	3.2	3.0	3.1	3.6	3.5
July, 1958	3.8	4.1	4.6	4.3	4.3	3.6	3.7	3.8	4.3	4.3
TURKEY-FEED—										
July, 1959	6.5	6.8	8.0	6.5	7.4	6.0	5.9	6.3	6.4	5.8
June, 1959	6.6	6.5	7.6	6.5	7.4	6.2	7.0	6.0	6.4	5.8
July, 1958	7.0	7.0	8.0	7.3	8.5	6.1	6.7	6.9	6.8	6.1
Average (1948-57)	8.6									
Average (July, 1948-57)	8.2									
EGG-FEED—										
July, 1959	8.8	12.2	10.2	7.9	7.8	9.7	9.2	8.3	9.5	7.8
June, 1959	7.3	9.2	7.7	6.7	6.7	8.3	8.2	7.1	8.1	6.7
July, 1958	10.5	11.3	10.8	10.0	10.3	10.3	10.4	10.4	10.8	9.1
Average (1948-57)	11.1									
Average (July, 1948-57)	10.5									

	U.S.	North Atl.	East North Cent.	West North Cent.	South Atl.	South Cent.	West
MILK-FEED—							
July, 1959	1.34	1.31	1.28	1.47	1.57	1.40	1.28
June, 1959	1.27	1.17	1.23	1.42	1.53	1.34	1.26
July, 1958	1.28	1.29	1.19	1.39	1.47	1.36	1.32
Average (1948-57)	1.29						
Average (July, 1948-57)	1.19						
BUTTERFAT-FEED—							
July, 1959	24.8	...	20.3	27.4	...	16.5	18.4
June, 1959	24.7	...	19.9	27.4	...	16.3	18.3
July, 1958	22.8	...	18.9	25.5	...	15.6	19.0
Average (1948-57)	22.0						
Average (July 1948-57)	21.4						

	U.S.	North Cent.
HOG-CORN—		
July, 1959	11.8	11.9
June, 1959	12.9	13.1
July 1958	18.4	18.8
Average (1948-57)	13.4	13.7
Average (July, 1948-57)	13.4	13.6

NOTE: Ratios computed at mid-month by U.S. Department of Agriculture. Ratios represent number of pounds of poultry feed equal in value to 1 lb. live farm chicken, turkey or 1 doz. eggs; pounds broiler growing mash equal to 1 lb. broiler; pounds concentrate rations equal to 1 lb. milk or butterfat; bushels of corn equal to 100 lb. hog. Increases in ratios are favorable to the feeder.

KEY TO GEOGRAPHICAL DIVISION

Here is a guide to the states included in the geographical divisions listed in the accompanying commodity-feed price ratios:

New England: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut.

Mid-Atlantic: New York, New Jersey, Pennsylvania.

North Atlantic: New England and Mid-Atlantic states combined.

East North Central: Ohio, Indiana, Illinois, Michigan, Wisconsin.

West North Central: Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas.

North Central: Combination of the two foregoing.

South Atlantic: Delaware, Maryland, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida.

East South Central: Kentucky, Tennessee, Alabama, Mississippi.

West South Central: Arkansas, Louisiana, Oklahoma, Texas.

South Central: Combination of the two above.

Pacific: Washington, Oregon, California.

Mountain: Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Montana.

West: Combination of the two above.

PRICES

(Continued from page 1)

USDA reported that the index of prices paid for commodities, interest, taxes and farm wage rates remained the same as a month earlier. This was 2% higher than a year earlier. Prices for farm production goods declined slightly from June to July. The seasonally adjusted index of cash farm wage rates also declined slighty. Prices paid for family living items rose slightly to a new record high.

The parity ratio held unchanged from a month earlier at 81—5% under a year earlier.

Meat animals: The hog-corn ratio July 15 was 11.8, compared with 12.9 for a month earlier and 18.4 for a year earlier. (See table on page 93.)

Prices received by farmers for meat animals in mid-July averaged 5% lower than in mid-June. Hogs, at $13.30 cwt., were down $1.70 from a month earlier and the lowest since March, 1956. Sows, as usual at this time of year, constituted a substantial share of marketings.

Beef cattle, at $23.10 cwt., were down 50¢, with most of the decline showing slaughter cows. Lambs, at $19.90, were down $1.30, and calves were off 40¢ cwt.

The index of prices received by farmers, at 314% of 1910-14, was the lowest so far this year and 10% below last July.

Poultry and eggs: The chicken-feed ratio for farm chickens July 15 was 3.1, slightly better than for a month earlier, but well below the 4.3 ratio of July, 1958, and the 1948-57 average of 5.7.

For broilers, the July chicken-feed ratio was 3.3, about the same as a month earlier, but lower than the 3.8 ratio of a year earlier.

The turkey-feed ratio dropped from 6.6 to 6.5 from June 15 to July 15. For July a year ago the ratio was 7, and the 1948-57 average is 8.6.

An upward swing was taken by the egg-feed ratio to 8.8 from 7.3 a month earlier, but the July 15 figure was still substantially below the 10.5 ratio of July, 1958, and the 1948-57 average of 11.1.

Led by higher egg prices, the index of poultry and egg prices rose 12% during the month ended July 15 to 139. Farm chicken and broiler prices also were higher, but turkey prices declined slightly. Eggs, at 30.2¢ doz., were up 21% during the month compared with the usual seasonal increase of about 5%. Prices for all commodities in the poultry and egg index remained well below a year earlier, so that the July index was 17% below last year.

Dairy products: USDA said the upturn in wholesale milk prices from the seasonal low in June was primarily responsible for the seasonal increase in the dairy products index of prices received by farmers during the month. At 32 in mid-July it was 4% above a month earlier and slightly (1 point) above a year earlier.

July's milk-feed ratio, at 1.34, was up from the index of 1.27 for a month earlier and was higher than the July, 1958 ratio of 1.28. The butterfat-feed ratio for July remained fairly steady at 24.8 compared with 24.7 for June. The July, 1958 ratio was 22.8 and the 1941-57 average is 22.

A continued reduction in prices paid by farmers for many commodities used in farm production was responsible for a 1 point (one third of 1%) decline in the index of prices paid for commodities and services during the month ended July 15. The index of prices of family living items rose slightly to a new all-time high. At 275% of the 1910-14 average, the combined prices paid index was 1 point higher than a year earlier.

Prices paid by farmers for feeder and replacement livestock dropped 2% from mid-June to mid-July. Prices of feeder lambs averaged 70¢ below mid-June. Feeder pigs were off $1.60 cwt. Both baby chick and turkey poult prices averaged about 7% below a month earlier. Despite these declines, the feeder livestock index, at 383, was 1% higher than in July of last year.

The FEED MARKET

PRICE QUOTATIONS, MARKET TRENDS
OF PRINCIPAL INGREDIENTS

NOTE: Quotations on feed ingredients shown in these and adjoining columns are wholesale prices, per ton, bagged, for prompt delivery, unless otherwise noted. They are the latest quotations available from Feedstuffs correspondents and are not necessarily those in effect on date of publication. The prices represent fair average trading values and do not necessarily represent extreme low or high levels at which individual sales might have occurred. A descriptive summary of supply and demand factors prevalent in the feed market appears on page 2.

A & D FEEDING OIL

Denver: Demand fair; trend steady; supply ample; 2250 A, 300 D 22¢ lb. f.o.b. Denver.

Boston: Demand fair; supply adequate; 600 D, 1,500 A 17½¢; 300 D, 2,250 A 18¢; 300 D, 1,500 A 16½¢; 300 D, 750 A 14¾¢; 400 D, 3,000 A 20¢; 300 D, 3,000 A 19½¢; 75 D, 750 A 14½¢ lb.

Minneapolis: Demand fair; supply ample; 10,000 A 34½¢ lb.; 300 D, 2,250 A 19¢ lb.; 300 D, 1,500 A 17½¢ lb.; 300 D, 750 A 16¢ lb.

Chicago: Demand fair; trend steady; supply ample; straight A feeding oil, with 10,000 units vitamin A per gram, 7@7¼¢ a million units of vitamin A, l.c.l., packed in 55-gal. drums, f.o.b. Chicago, drums included.

New York: Demand and supply good; trend firm; price per lb. in 55-gal. drums (413 to 420 lb.): 300 ICU, 750 A 13½@15½¢, 1,500 A 15½@17¢; 2,250 A 17½@20¢, 3,000 A 19@21¢; 600 ICU, 1,500 A 16@18¢, 2,250 A 18@19½¢; f.o.b. Massachusetts, New York or Pennsylvania.

ALFALFA MEAL

Philadelphia: Demand and supply fair; trend unsettled; 17% dehydrated $62.50.

Omaha: Demand good; trend steady; supply ample; 17% dehydrated 100,000 A units bulk pellets, $41; sacked meal, $45, Omaha basis.

Portland: Demand good; supply ample; trend lower; suncured 15% $40, dehydrated $63.40.

Denver: Demand good; trend strong; supply ample; $48 Denver.

Cincinnati: Demand fair; supply adequate; trend steady; 17% dehydrated, 100,000 vitamin A $59.50@60.50.

Memphis: Demand fair; trend steady to higher; supply ample; dehydrated, 17% protein, guaranteed 100,000 units, vitamin A, $50.80.

Los Angeles: Demand and trend steady; supply ample; dehydrated meal, 17% protein, 100,000 A, $50 bulk; dehydrated pellet meal, 17% protein, 100,000 A, $52@53 bulk; suncured meal, 15% protein, $42@43 bulk; suncured crumbles, 15% protein, $44@45 bulk.

Ft. Worth: Demand fair; offerings sufficient; dehydrated 17% 100,000 A $53.80 rail, truck $53@54; suncured 13% ¼" grind No. 1 $41@42 truck.

Boston: Demand slow; supply adequate; dehydrated 17%, $62; suncured 13%, $49.

Chicago: Demand fair; supply ample; trend steady; carlots, 17% dehydrated with 100,000 units vitamin A guaranteed, $53.50; 13% protein, No. 1 ground, $43.70.

Kansas City: Demand fairly good with some dehydrators saying they have all the business they want; trend steady; supply adequate though blenders say they will not be able to fill all their storage space before frost arrives in some cases; dehydrated alfalfa with 17% protein and 100,000 units vitamin A guaranteed on arrival: Regular meal $46@47, sacked; reground pellets $47, sacked; pellets $41@42, bulk, blenders being ready buyers for pellets offered at the lower level; 18% protein 125,000 units A meal $51, sacked; 20% protein 150,000 A meal $57, sacked; suncured meal demand is generally slow although pellets find a ready market and are particularly tight, No. 1 fine ground $40@41, No. 1 ¼-inch $38@39, No. 2 ¼-inch $35, sacked.

Buffalo: Demand and supply fair; trend steady; $65, sacked, Boston.

New Orleans: Demand steady; supply adequate; trend firm; vitamin A 17% $59@60; pellets $53@54.

St. Louis: Demand slow; supply ample; trend steady; suncured 13% fine, $42; dehydrated 17%, 100,000 A demand fair, trend steady, supply ample, $52.

Minneapolis: Demand good; supply adequate; trend steady; 17% dehydrated, 100,000 units vitamin A, reground pellets $48, bulk, Minneapolis; oiled reground pellets $50 bulk; sacks $4 higher.

ANIMAL FATS (STABILIZED)

Ft. Worth: Demand fair; supply ample; prime tallow, tank cars, 6½¢; drums 7¼¢ f.o.b. south Texas packing plants with returnable drums.

Boston: Demand slow; supply plentiful; tallow, 6¼¢ lb.; yellow grease, 5¾¢.

Louisville: Demand very dull; supply good; trend weak; bleachable white, 6¼¢ lb.; white commercial tallow, 6¾¢ lb.; yellow grease 6¼¢ lb.

Chicago: Demand fair; trend steady; supply ample; bleachable fancy tallow, tanks, trucks or carlots, per cwt., $6.75; No. 1 yellow grease, per cwt., $6.37½.

Kansas City: Demand slow from mixers; trend steady; supply adequate for demand; prime tallow 6¼¢ lb., tank car.

New Orleans: Demand fair; trend steady; supply adequate; 6½@7¢ lb. tank cars.

Atlanta: Demand fair; supply good; trend steady; 6¼¢ lb. bulk, f.o.b. Georgia-Alabama producing mills.

St. Paul: Demand fair to good; supply ample; bleachable fancy tallow 6¼¢ lb., f.o.b. producer's plant.

BARLEY FEED

Milwaukee: Demand good; supply fair; needles 88¢ to $1; ground screenings $25 sacked Milwaukee.

Philadelphia: Demand slow; supply fair; $47.

Boston: Demand slow; supply good; $46.

Ogden: Supply normal; rolled, $46@51; whole barley, $38@43.

Portland: Demand good; supply ample; trend unchanged; rolled $56, ground $54.

Los Angeles: Demand slow; trend firmer; supply ample; standard rolled $2.98 per cwt. sacked, standard ground $2.98 per cwt. sacked.

New Orleans: Demand slow; supply ample; trend unchanged; $55@56.

Baltimore: Demand quiet; supply adequate; trend unchanged; carlots, $46.50.

Chicago: Demand quiet; trend steady; supply fair; carlots, $36.

BENTONITE (SODIUM)

Cincinnati: Demand steady; supply adequate; f.o.b. Cincinnati, minimum 30-ton carlots: 80 granular $31.50; 200 mesh fine $31.

Denver: Demand fair; supply ample; trend good; $23.

Chicago: Demand steady; trend firm; supply adequate; f.o.b. Wyoming and South Dakota shipping points: granular, 30 mesh $16.50; fine granular, 80 to 100 mesh $13.75; powder, 200 mesh $13.50, f.o.b. Belle Fourche, S.D., minimum 30-ton carlots, 80 granular $13.50 net; 200 mesh, fine $13.25 net.

BLOOD FLOUR

Louisville: Demand slow; trend weak; supply good; $75@80.

BLOOD MEAL

Omaha: Demand poor; supply plentiful; trend slow; $95 basis Omaha.

Portland: Demand good; supply ample; trend unchanged; $115.

Ogden: Supply average; $95 in 100 lb. bags, f.o.b. Ogden.

Los Angeles: Demand slow; supply light; trend unchanged; $5.75 per unit of ammonia.

Louisville: Demand dull; trend weak; supply good; $75@80.

Chicago: Demand fair; trend easier; supply adequate; guaranteed 80% protein, carlots, $122.50.

New Orleans: Demand slow; supply normal; trend unchanged; $85@90.

BONE MEAL (STEAMED)

Louisville: Demand poor; trend weak; supply light; $70@75.

Los Angeles: Demand fair; supply adequate; trend unchanged; imported $78 ton in 20 ton lots.

Cincinnati: Demand fair; supply ample; trend steady; $95 Cincinnati.

Portland: Demand good; supply ample; trend unchanged; $102.

Denver: Demand good; trend steady; supply ample; $103.20 Denver.

Ft. Worth: Demand very quiet; supply ample; $90 sacked f.o.b. Ft. Worth local manufacture.

Boston: Demand and supply steady; $90.

Chicago: Demand fair; supply ample; trend steady; carlots, 100 lb. bags, $97.50.

Buffalo: Demand good; supply limited; trend steady; $105 sacked.

New Orleans: Demand fair; supply ample; trend easy; $85@90.

BREWERS DRIED GRAINS

Milwaukee: Demand good; supply fair; $44.50.

Louisville: Demand slow; supply good; trend steady; $45.

Ft. Worth: Demand fair; supply sufficient; 26% protein $49@50 August delvd. Ft. Worth.

Los Angeles: Demand slow; supply adequate; trend unchanged; $49.50 bulk, $53.50 sacked.

Philadelphia: Demand and supply fair; $51.

Cincinnati: Demand fair; supply adequate; trend steady; $46.

Boston: Demand and supply steady; 26%, $51; 22%, $50@50.50.

Chicago: Demand fair; supply adequate; trend slightly easier; 26% protein, carlots, $43.50.

Buffalo: Demand and supply fair; trend steady to higher; $41.50, bulk, Boston.

St. Louis: Demand fair; trend steady; supply ample; $42.

New Orelans: Demand fair; trend easy; supply ample; $49@51.

BREWERS DRIED YEAST

Louisville: Demand slow; supply ample; trend steady; 10@10½¢ lb.

Los Angeles: Demand slow; supply adequate; trend unchanged; 10¢ lb. in 5 ton lots; 11¢ lb. in 1 ton lots; 12¢ lb. in less than ton lots.

Cincinnati: Carlots 10¢ lb.; 5-ton lots 11¢ lb.; ton lots 11½¢ lb.

Omaha: 10½¢ lb.

Denver: Demand light; trend steady; supply ample; 9¢ lb. f.o.b. Golden, Colo.

Portland: Demand good; supply ample; trend unchanged; 8¾¢.

Boston: Demand and supply steady; 11¢.

Cincinnati: Carlots 10¢ lb.; 5-ton lots 11¢ lb.; ton lots 11½¢ lb.

St. Louis: Demand good; trend steady; supply ample; carlots $9.50@10 cwt.; ton lots $10.50 cwt.; less than ton lots $11.50 cwt.

Milwaukee: Demand fair; trend steady; supply adequate; carlots $10@11 cwt.; l.c.l. $10.50@12.25 cwt.

Pittsburgh: Carlots 10¢ lb.; 5-ton lots 11¢ lb.; ton lots 11½¢ lb.

New Orleans: Carlots 10¢ lb.; 5-ton lots 11¢ lb.; ton lots 11½¢ lb.

New York: Carlots 9½¢ lb.; 10-ton lots 10¢ lb.; 5-ton lots 10½¢ lb.; ton lots 11¢ lb., f.o.b. New Jersey.

BUTTERMILK-CONDENSED

Ogden: Supply normal; $4.40 per 100 lb. drum.

Philadelphia: Demand slow; supply light; $4.25.

Los Angeles: Demand slow; supply adequate; trend unchanged; 5½¢ lb. in 100 lb. lots, 4½¢ lb. in 500 lb. lots.

Louisville: Demand slow; trend steady; supply light; $4.25 cwt.

Boston: Demand quiet; supply light; 3¾¢ lb.

Chicago: Demand fair; trend unchanged; supply ample; per cwt., carlots, $3.25@3.50.

New Orleans: Demand slow; supply average; trend unchanged; $4.25@4.30 cwt.

CALCITE CRYSTALS AND FLOUR

(All prices net, including freight)

New York: Crystals $15.28, flour $10.28.
Buffalo: Crystals $16.11, flour $11.11.
Toledo: Crystals $17.96, flour $12.96.
Boston: Crystals $16.53, flour $11.63.
Limerock, N.J.: Crystals $10.50, flour $5.50.

CALCIUM CARBONATE

Cincinnati: Demand fair; supply adequate; trend steady; $8@9 cwt.

Los Angeles: Demand slow; supply adequate; trend unchanged; flour $10.15 sacked in 20 ton lots, meal $11.15 sacked in 20 ton lots.

Minneapolis: Fine grind, 50-lb. bags $12.25, 100-lb. bags $11.50; bulk, boxcar $10; bulk hopper $9.50; coarse grind $1 premium, delivered Minneapolis.

Chicago: Demand steady; trend firm; supply adequate; fine grind, plain, 100-lb. bags $9.54; bulk, in hopper cars $7.54; bulk in boxcars $8.04; granular grind $1 premium.

CHARCOAL

Los Angeles: Demand fair; supply adequate; trend unchanged; hardwood poultry $156 sacked in less than ton lots; $144.40 sacked in ton lots.

Boston: Demand and supply steady; $100.

Chicago: Demand and supply fair; trend steady; per ton, carlots, in 50 lb. multiwalls, $110.

COCONUT OIL MEAL

Portland: Demand slow; supply ample; trend unchanged; $68.

Los Angeles: Demand limited; moderate offerings; trend weaker; copra cake $75 bulk September delivery.

COD LIVER OIL (FORTIFIED)

Boston: Demand fair; supply adequate; 600 D, 2,250 A 19¢ lb.; 300 D, 3,000 A 20½¢; 300 D, 2,250 A 18¼¢; 600 D, 1,500 A 18¢; 300 D, 1,500 A 17¢.

New York: Demand and supply good; trend firm; price per lb. in 55-gal. drums (413 to 420 lb.): 300 ICU, 750 A 14½@15½¢, 1,500 A 18½@20¢, 2,250 A 18½@21¢, 3,000 A 21¼@23¢; 600 ICU, 1,600 A 17½@19½¢, 2,250 A 20@22¢, 3,000 A 22@23¢; f.o.b. Massachusetts, New York or Pennsylvania.

CONDENSED FISH SOLUBLES

Los Angeles: Demand slow; supply adequate; trend unchanged; 4.54¢ lb.

Boston: Demand and supply good; 4½¢ lb.

Denver: Demand fair; trend steady; supply ample; $172.40 Denver.

New York: Demand fair; trend steady; supply tight; 3½@3¾¢ lb., f.o.b. eastern shore.

New Orleans: Demand light; supply normal; trend steady; $65@70, f.o.b. Gulf.

CORN GLUTEN FEED AND MEAL

(All quotations for all cities are sacked basis, bulk basis $5 less)

Minneapolis: Feed $46.90, meal $67.90.
Atlanta: Feed $52.98, meal $73.98.
Birmingham: Feed $51.64, meal $72.64.
Boston: Feed $51.84, meal $72.84.
Chicago: Feed $40, meal $61.
Cleveland: Feed $48.14, meal $69.14.
Denver: Feed $50.51, meal $71.51.
Ft. Worth: Feed $48.96, meal $69.96.
Indianapolis: Feed $45.36, meal $66.36.
Kansas City: Feed $40, meal $61.
Louisville: Feed $47.21, meal $68.21.
New Orleans: Feed $50.20, meal $71.20.
New York: Feed $52.43, meal $72.43.
Norfolk: Feed $50.71, meal $71.71.
Philadelphia: Feed $51.02, meal $72.02.
Pittsburgh: Feed $48.96, meal $69.96.
St. Louis: Feed $40, meal $61.

CORN OIL MEAL

Cincinnati: Demand fair; trend steady; supply adequate; $46.

Louisville: Demand dull; trend steady; supply light; $49.45.

COTTONSEED OIL MEAL

Louisville: Trend stronger; old process $74.50, new process $71.50.

Omaha: Demand slow; supply ample; trend easy; 41% solvent, $64.10 bulk delivered Omaha.

Los Angeles: Demand moderate; supply adequate; trend unchanged; $72@73 bulk.

Cincinnati: Demand poor; supply adequate; trend steady; $72.50.

Ft. Worth: Demand poor; supply sufficient; 41% old process $63@65, solvent 1% fat added $63.20, pellets $2 additional; cottonseed hulls $20.

Memphis: Demand poor; trend lower; supply none; prime 41% protein, old process, $67, sacked; new process, 41% solvent, $65.50, sacked.

Portland: Demand slow; supply ample; trend unchanged; $80.

Wichita: Demand fair; supply sufficient; 41% old process $74.50.

Philadelphia: Demand slow; trend unsettled; supply fair; $70.

Denver: Demand fair; supply ample; trend steady; $67.60 Denver.

Ogden: Supply normal; 41%, $80@85.

Boston: Demand poor; supply adequate; $78.

Kansas City: Demand fairly good; trend steady; supply adequate from Texas where new crop production is making itself felt, very little available at Memphis; old process meal $69, sacked, delivered, Kansas City; solvent $67, sacked, delivered.

St. Louis: Demand slow; trend steady; supply limited; solvent $72.

Atlanta: Demand fair; trend weak; supply very limited; 41% $58, f.o.b. Georgia-Alabama producing mills, last half August.

Chicago: Demand fair; trend steady; supply ample; carlots, hydraulic, $68; solvent $67, Memphis basis.

Buffalo: Demand poor; trend steady; supply adequate; $81, sacked, Boston.

New Orleans: Demand fair; supply limited; trend steady; $79@80.

CURACAO PHOSPHATE

New York: Trend steady; ground Curacao phosphate in 100-lb. bags $48, f.o.b. cars or trucks, New Orleans, Jacksonville, Fla., or Philadelphia.

D ACTIVATED ANIMAL STEROL (POWDERED)

Cincinnati: Demand fair; trend steady; supply ample; 1,500 ICU 11@12¢ lb.; 3,000 ICU 18¢ lb., warehouse.

Kansas City: Demand fair; supply adequate; trend steady; 1,500 ICU 9¾@10¢ lb.; 3,000 ICU 11½¢ lb.

New York: Demand and supply good; trend firm; price per lb. in 50- and 100-lb. bags, or 100-lb. drums: 1,500 ICU 8@12¢ bagged, 12@13¢ drums; 3,000 ICU 13@17¢ bagged, 17@18¢ drums; f.o.b. or delivered basis Pennsylvania, Delaware or New York.

D ACTIVATED PLANT STEROL (POWDERED)

Chicago: Demand good; supply fair; 4,000,000 U.S.P. units per lb., 15¢ lb. in ton lots, less than ton lots 17¢ lb.; 12,000,000 units per lb., 5 tons to a carload 28¢ lb., ton lots and less 30¢ lb.

DEFLUORINATED PHOSPHATE

Cincinnati: 18% phosphorus $81; 13% phosphorus $64.98, f.o.b. Cincinnati.

Houston: Minimum phosphorus 19%, minimum calcium 32%, maximum calcium 35%, maximum fluorine .19% $71.50 net ton, f.o.b. Houston, 100-lb. multiwall paper bags, $68.50 in bulk.

Cincinnati: 18% phosphorus $81; 13% phosphorus $64.98, f.o.b. Cincinnati.

Tupelo, Miss.: Minimum phosphorus 13%, minimum calcium 31%, maximum fluorine .12%, $51 net ton, f.o.b. Tupelo in 100-lb. multiwall bags, $48 in bulk.

Wales, Tenn.: Minimum phosphorus 18%, minimum calcium 33%, maximum calcium 36%, maximum fluorine .18% $69.12 net ton, f.o.b. Wales in 100-lb. multiwall bags, $3 less in bulk.

Coronet, Fla.: Minimum phosphorus 18%, minimum calcium 31%, maximum calcium 34%, maximum fluorine .18%; carlots $63.50, truck load $64.25, net ton, f.o.b. Coronet in 100-lb. multiwall bags $60.50 and $61.25 in bulk.

DICALCIUM PHOSPHATE

Denver: Demand fair; trend steady; supply ample; $95.60 delivered in Denver.

Cincinnati: 18½% phosphorus $92@93.

Minneapolis: 18.5% phosphorus, 24% calcium granular or fine ground $94.10, delivered; $3 less in bulk.

Trenton, Mich.: Minimum phosphorus 18½%, maximum fluorine 0.003% guaranteed $83.25, f.o.b. Trenton in 100-lb. multiwalls; minimum phosphorus 21% maximum fluorine 0.003% guaranteed $94.50, f.o.b. Trenton in 100-lb. multiwall bags.

Chicago: Stock food grade, 18.5% phosphorus, 20,000 lb. or more $83.25 net ton in 100-lb. papers, basis Chicago Heights, Ill., or Nashville, Tenn.; less than 20,000 lb. $93.25; 21% phosphorus, 20,000 lb. or more $94.50, basis Chicago Heights and Nashville; less than 20,000 lb. $104.50; bulk boxcars or hoppers $3 net ton less than bagged material.

Bonnie, Fla.: Minimum phosphorus 18½%, granular $83.25; freight equalized with closest producing point, carload basis.

Texas City, Texas: 18.5% minimum phosphorus, 21% minimum calcium, 24% maximum, granular $77.70 net ton, f.o.b. Texas City in 100-lb. multiwall bags; bulk, boxcars and hoppers, $3 net ton less than bagged material.

Columbia, Tenn.: Minimum phosphorus 18½%, minimum 25% calcium, maximum .01% fluorine guaranteed $83.25, f.o.b. Columbia, in 100-lb multiwall bags; freight equalized with nearest producing point, carload basis; bulk $3 ton less.

Portland: Demand good; supply ample; trend unchanged $115.

DISTILLERS DRIED GRAINS

Cincinnati: Demand poor; supply adequate; trend steady; $49.50.

Philadelphia: Demand slow; supply light; $60.50.

Louisville: Demand fair; trend steady; supply light; very little production for August; bourbon grains, light $50; dark $52; solubles $77.

Boston: Demand light; supply improving; light, $60 first half August; dark, $61.

Buffalo: Demand fair; trend steady; supply good; $56, bulk, Boston.

DRIED BEET PULP

Denver: Demand good; supply ample; trend steady; $49.23 delivered in Denver.

Portland: Demand good; trend lower; supply improved; $57.

Milwaukee: Demand good; supply fair; $52.

Ogden: Supply nominal; $44@48.

Ft. Worth: Demand slow; offerings light; carlots, 50-lb. papers, $63 Aug. delvd. Ft. Worth.

Boston: Demand very slow; supply ample; $59@60.

Los Angeles: Demand steady; trend un-

changed; supply moderate; molasses $47.80 @48.60 new crop August.

Buffalo: Demand fair; trend lower; supply good; $50, sacked, Boston.

Atlanta: Demand none; trend weak; supply fair; $59.20 delivered.

New Orleans: Demand fair; supply limited; trend unchanged; $62@63.

DRIED BUTTERMILK

Ogden: Supply normal; $8.50 per 100 lb. bag.

Los Angeles: Demand slow; supply adequate; trend unchanged; 11¾¢ lb.

Milwaukee: Demand and supply fair; $10.50.

Louisville: Demand dull; trend steady; supply ample; 11½@12¢ lb.

Chicago: Demand fair; supply ample; trend steady; per cwt., carlots, medium acid, $10.60@10.80; sweet cream, $11@11.25.

New Orleans: Demand fair; trend easy; supply normal; $11.50@12 per cwt.

DRIED CITRUS PULP

Los Angeles: Demand good; supply moderate; trend steady; orange pulp $43 bulk, lemon pulp $42 bulk.

Boston: Demand slow; supply adequate; $37.50 f.o.b. Florida.

Atlanta: Demand fair; trend steady; supply good; $37.50@40, f.o.b. Florida producing mills, meal $33.50@35.

Buffalo: Demand fair to poor; supply adequate; trend steady; $37.50, sacked, f.o.b. Florida points.

New Orleans: Demand fair; trend strong; supply good; $40@45, f.o.b. Florida points.

DRIED SKIM MILK

Philadelphia: Demand slow; supply light; $12.50.

Cincinnati: Demand fair; trend steady; supply adequate; 10½@10¾¢ lb.

Portland: Demand slow; trend unchanged; supply ample; 13¢.

Los Angeles: Demand slow; supply adequate; trend unchanged; 14¢ lb. in less than ton lots, 13¾¢ lb. in ton lots.

Milwaukee: Demand and supply fair; $11.

Ogden: Supply normal; $15.15 per 100 lb. drum.

Louisville: Demand dull; supply normal; trend steady; 11@11½¢ lb.

Boston: Demand and supply good; 12¢ lb.

Chicago: Demand fair; supply adequate; trend steady; per cwt., carlots, $10.40@10.65.

Minneapolis: Demand good; trend steady; supply scarce; 11¢ lb.

New Orleans: Demand fair; supply ample; trend unchanged; $11.50@12 cwt.

DRIED WHEY

Ogden: Supply average; $6.90 per 100 lb. bag.

Louisville: Demand slow; trend steady; supply ample; 6@6½¢ lb.

Los Angeles: Demand slow; supply adequate; trend unchanged; $6.10 cwt. in car loads, $6.35 cwt. in l.c.l.

Portland: Demand slow; trend lower; supply ample; $6.80.

Denver: Demand fair; trend steady; supply ample; $6.50 cwt.

Cincinnati: Demand fair; trend steady; supply adequate; $6.15 cwt.

Ft. Worth: Demand fair; supply adequate; carlots, standard $6 sacked, delvd. Ft. Worth; $6.25 ton lots, f.o.b. warehouse Ft. Worth.

Philadelphia: Demand slow; supply light; $6.50.

Boston: Demand steady; supply fair; 5½¢ lb. f.o.b. shipping points.

Minneapolis: 40 mesh $5.65 cwt.; standard, $5.50 cwt., producer's plant.

Chicago: Demand fair; trend steady; supply ample; per cwt., carlots, f.o.b. plant, $5.50.

New Orleans: Demand good; supply ample; trend steady; $6@6.50 cwt.

Kansas City: Demand fair; supply adequate; trend steady; regular and partially delactosed $5.50 cwt., producers' plants.

FEATHER MEAL (HYDROLYZED)

Los Angeles: Demand fair; trend unchanged; supply adequate; $1 a unit of protein.

Ft. Worth: Demand good; supply scarce; 85% to 87% protein $95 f.o.b. trucks north Texas plants.

Boston: Demand inactive; supply nil; withdrawn.

Atlanta: Demand fair; supply good; trend steady; $88, f.o.b. Georgia and Alabama producing mills.

Salisbury, Md.: Demand good; supply limited; $98, f.o.b. bulk, sacked $4 more.

FISH MEAL

Omaha: Demand fair; supply plentiful; trend steady; 60% menhaden, $145.

Denver: Demand fair; trend steady; supply ample; $2.20 unit of protein f.o.b. West Coast.

Ogden: Supply average; $2.20 per unit f.o.b. Coast, 65% $176@178.

Portland: Demand good; supply ample; trend unchanged; $2.10.

Milwaukee: Demand good; supply fair; 60% $160.

Los Angeles: Demand good; supply light; trend improved; local production 60% protein $2.17½ per unit.

Ft. Worth: Demand good; supply sufficient; 60% menhaden $135; 60% Angola $137 delvd. Ft. Worth.

Cincinnati: Demand fair; trend steady; supply adequate; $160.

Louisville: Demand dull; trend steady; supply light; $160.

Boston: Demand fair; supply ample; $130 f.o.b. shipping points.

Atlanta: Demand fair; trend steady; supply good; 60% menhaden $128, f.o.b. Atlantic and Gulf ports.

New Orleans: Demand fair; supply normal; trend steady; menhaden 60% $128@134; scrap $124@130, f.o.b. Gulf.

Chicago: Demand slow; trend steady to easier; supply ample; carlots, Eastern menhaden meal $128@130 and Gulf $128@130; scrap, Eastern menhaden $124@126 and Gulf $124@126. Eastern white fish meal, $130; herring meal, no offerings; Northeast Redfish meal, $130.

Minneapolis: Demand and supply fair; trend steady; Gulf menhaden $146@148; 60% blended $149@160; 70% herring $2 unit of protein, f.o.b. Canadian coast.

Buffalo: Demand just fair; supply ample; trend steady; 60% protein, menhaden, $140, bulk; $145, sacked.

HAY

Philadelphia: Demand slow; supply light; $25@26.

Denver: Demand fair; trend good; supply ample; $24@25 on new hay 2nd cutting.

Ogden: Supply normal; $1@1.25 bale; $20 ton in the field.

Los Angeles: Demand and trend steady; limited offerings; U.S. No. 1 $32@33; U.S. No. 2 leafy $29.50@30.50; U.S. No. 2 green $29@30; U.S. No. 2 $27@28.

Louisville: Demand very dull; trend weak; supply good; No. 1 local hay, any variety $23@25, No. 2 about $2 less; straw $18@20. Alfalfa hay somewhat stronger.

Ft. Worth: Demand fair for alfalfa, practically nil for prairie and Johnson grass; supply sufficient; carlots, baled, No. 1 alfalfa $36@38; No. 2 $34@36; No. 2 prairie $26@28; No. 2 Johnson $24@26 delivered Texas common points.

Portland: Demand good; supply ample; trend unchanged; $32.

Cincinnati: Demand poor; trend steady; supply adequate; No. 1 timothy $24; No. 1 second cutting green alfalfa $31; mixed $27; wheat or oat straw $19.

Wichita: Demand fair; supply sufficient; prairie $17.50, alfalfa $15@18.

Boston: Demand slow; supply spotty; No. 2 timothy, old crop, $41@43.

HOMINY FEED

Milwaukee: Demand good; supply fair; $39 sacked Milwaukee.

Cincinnati: Demand fair; trend lower; supply adequate; $46.

Memphis: Demand poor; trend lower; supply ample; white $45, yellow $45.

Louisville: Demand dull; trend very weak; supply normal; $45 ton, down $5.50 ton.

Boston: Demand slow; supply ample; $45.50 bulk.

St. Louis: Demand slow; supply ample; trend lower; yellow $42.

Chicago: Demand quiet; trend easier; supply ample; carlots, $40.

Kansas City: Demand very slow; trend weak on spot stronger forward; distressed material available on track; yellow $33, bulk for spot and $35 forward, nominally; white $33, bulk.

Buffalo: Demand poor; trend steady to lower; supply good; $46, bulk, Boston.

New Orleans: Demand slow; supply adequate; trend steady; $53@53.50.

LINSEED OIL MEAL

Milwaukee: Demand good; supply fair; old process $80, new process $71.50.

Louisville: Demand dull; supply scarce; trend strong; old process $88, up $9.50; new process $79.50, up $9.

Los Angeles: Demand steady; trend unchanged; supply light; local production 29% protein $71 bulk new crop.

Philadelphia: Demand slow; supply fair; 34% $83.50.

Omaha: Demand good; trend strong; supply tight; 34% solvent, $67.80 bulk; 32% old process, $74.30, Omaha basis.

Cincinnati: Demand poor; trend steady; supply adequate; new process $77, old process $86.

Denver: Demand fair; trend strong; supply ample; $79.44 sacked Denver.

Wichita: Demand fair; supply sufficient; 34% $82.50.

Portland: Demand slow; trend lower; supply ample; $86.

Ft. Worth: Demand slow; supply light; Texas production 34% O.P. $81, rail or truck.

Boston: Demand slow; supply limited; $61.50 bulk, f.o.b. Minneapolis.

Kansas City: Demand improved to become quite heavy when government toll crush was completed; trend steady to stronger; supply very tight on old process but fairly adequate on solvent; solvent meal $61@61.50, bulk, Minneapolis; old process $69.50@70.

Minneapolis: Demand fair; trend steady; supply ample; solvent $61.50 bulk, Minneapolis.

Chicago: Demand fair; supply ample; trend about steady; carlots, solvent, $61; hydraulic, $69.50.

New Orleans: Demand slow; supply ample; trend steady; $80@81.

LIVER AND GLANDULAR MEAL

Omaha: Demand good; trend steady; supply light; 65% $210, Omaha basis.

MALT SPROUTS

Chicago: Demand fair; trend unchanged; supply ample; No. 1, uneven weight bags, carlots, $34; bulk, $27.

New Orleans: Demand fair; supply ample; trend steady; $40@42.

Milwaukee: Demand good; supply fair; odd weights $35, even weights $38.

Cincinnati: Demand fair; trend steady; supply adequate; No. 1, $42.

Boston: Demand and supply limited; $42.50 nominal.

MEAT AND BONE MEAL

Los Angeles: Demand limited; trend unchanged; supply adequate; 50% protein, $1.75 per unit bulk.

Louisville: Demand slow; trend weak; supply good; $80@85.

Denver: Demand normal; trend steady; supply ample; 50%, $81 bagged truck lots, $78.50 bulk lots.

Ogden: Supply normal; $93 per ton in 100 lb. bags.

Ft. Worth: Demand fair; supply ample; meat and bone 50% $84 f.o.b. or delvd. Ft. Worth.

Omaha: Demand slow; supply plentiful; trend steady; $85.

Portland: Demand slow; trend lower; supply ample; $1.70.

Wichita: Demand heavy; supply insufficient; 50% $97.50, f.o.b. plant; 55%, no quotations, no offerings.

Cincinnati: Demand fair; trend easy; supply good; 50% meat and bone scraps $82.50 Cincinnati.

Boston: Demand cautious; supply plentiful; $1.30 per protein unit; converted 50% $78.50.

St. Louis: Demand slow; supply ample; trend lower; $83.

Chicago: Demand fair; supply ample; trend easier; carlots, 100 lb. bags, 50% protein, $90.

New York: Demand and supply fair; trend lower; 50% $75.50, 55% $83, bulk; 50% $78, 55% $85.50, sacked.

Buffalo: Demand just about fair; trend easier; supply ample; 50% meat scraps, $80 bulk; $85, sacked.

St. Paul: Demand fair; supply adequate; downward trend; $82@86.

Kansas City: Demand slow; supply light; trend steady; 50% meat and bone scraps $85, sacked.

New Orleans: Demand easy; supply ample; trend steady; $90@93.

MILLFEEDS

Minneapolis: Demand light; supply ample; trend weak for middlings; $34.50@35.50; trend steady for bran, $34@34.50, and red dog $46@50.

Kansas City: Demand good for sacked bran, slow for other types; trend steady; supply tight on sacked bran, ample on others; bran $32@32.75, shorts $41.25@42, sacked; bran $28@28.75, shorts $34@34.75, middlings $30@30.75, bulk.

Wichita: Demand fair; supply about offsets demand; basis Kansas City: Bran $32.25@32.75, shorts $41.25@41.75; bran advanced $1.50 and shorts $2, compared with the preceding week.

Ft. Worth: Demand good; offerings limited; carlots, burlaps, bran $40.50, gray shorts $49.50; bulk middlings $40; delivered Texas common points; 50¢ lower on bran, $1 higher on shorts and $2.50 lower on middlings compared with previous week.

Chicago: During the week ending Aug. 5, the supply and demand situation insofar as bran was concerned seemed to be pretty well evenly balanced and the net result was virtually no price change from the week before. During the past couple of days, there were reports of a rather brisk resumption of flour business, talk running as high as 8 million sacks but, so far, there has been no indication of any material pressure of offerings of millfeeds. This could be due to the understanding that the new business in flour is supposed to have been for shipment considerably later in the year. Standard middlings were being offered and moving at prices $1@1.50 ton below last week. Red dog again acted independently easy, but the losses for the weekly period were only about half as large as for the one previous. Quotations: Carlots, standard bran, sacked $39, bulk $34; standard middlings, sacked $41, bulk $36; red dog, sacked $51.50, bulk $47.50.

St. Louis: Bran $37.50@38, shorts $46.75@47.25, sacked; bran $33@33.50, shorts $37.50@38, middlings $35.50@36, bulk.

Omaha: Demand slow; supply ample; trend easy; sacked bran $33, sacked gray shorts $43, bulk standard midds. $33.50, all Omaha basis.

Cincinnati: Demand fair; trend bran, lower; middlings, steady; supply adequate; bran $39.50, middlings $47.

Boston: Demand good; supply steady; bran $45.50, middlings $50.

Buffalo: Trading was quiet in millfeeds last week, with not enough demand to offset the supply factor. Local prices have been consistently below western competition but it has failed to attract any demand. The market has moved within about a $1 range for almost a month and currently is at the bottom of the range. The sacked differential on bran and middlings held steady at $5.50 and $4.50 for red dog. Bulk and sacked bran were off 50¢; bulk and sacked midds. were down $1.50 and bulk and sacked red dog held unchanged. Quotations Aug. 5: Bulk bran, $30.50@31, sacked

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$36@36.50; bulk midds. $36@37, sacked $41.50@42.50; bulk red dog $52@52.50, sacked $56@57.50.

New York: Demand fair; trend steady; supply good; bran $43.50@44, standard midds. $49@49.50.

Philadelphia: Demand spotty; trend unsettled; supply fair; bran $45, standard middlings $50.50, red dog $56.

New Orleans: Demand fair; supply normal; trend steady; bran sacked $42.50@43.25, bulk $38.75@39.50; shorts sacked $50.75@51.50, bulk $44@44.75.

Memphis: Demand fair; trend steady; supply scarce; wheat bran $40.30 sacked, gray shorts $49.80 sacked, standard middlings $39 bulk.

Louisville: Demand fair; trend strong; supply good; bran $43.60, up $1.50; mixed feed $48.60, up $1.75; shorts $54.10, up $2; midds. $49.80, up 50¢.

Portland: Demand good; trend higher; supply ample; $41.

Ogden: Supply average; to Utah and Idaho: Red bran and millrun, $40; midds., $45. To Denver: Red bran and millrun, $47; midds. $52. To California: Red bran and millrun, $47.50; midds. $52.50, f.o.b. San Francisco and Los Angeles.

Denver: Demand good; trend steady; supply limited; $44.75 shorts, $35.75 bran, $40.25 millrun.

Los Angeles: Trend strong; demand good; supply light; standard millrun $46@46.50 bulk; trend higher; demand slow; supply adequate; red bran $49 bulk.

MINERAL FEED

Wichita: Demand good; supply sufficient; all-purpose with iodine, 50-lb. blocks $97.50, 100-lb. bags $92.50, f.o.b. plant.

Denver: Demand fair; trend steady; supply ample; $155.

Portland: Demand good; supply ample; trend unchanged; $45.

Ogden: Supply average; $113 ton in 50-lb. blocks; $103, granular, 50-lb. bags.

Ft. Worth: Demand fair; supply sufficient; all-purpose granules $90, block $97; mineral phosphorus 6% granules $106, block $113; cattle-sheep mineral 7% phosphorus granules $100, block $107; hog mineral phosphorus 3½% granules $87, phosphorus 2% $77 (all in 50-lb. paper bags).

Sioux City: 50-lb. mineral blocks 8.2% phosphorus $92; 7.5% phenothiazine sheep mineral blocks $4 each.

MOLASSES

Louisville: Demand slow; supply normal; trend steady; 11¼¢ gal., tank car lots, f.o.b. Gulf ports.

Cincinnati: Demand fair; trend steady; supply adequate; 11¼¢ gal. New Orleans.

Milwaukee: Demand and supply fair; blackstrap 11¢ gal., f.o.b. New Orleans; beet pulp, $53.50 Milwaukee.

Memphis: Demand poor; trend normal; supply adequate; blackstrap, 11¼¢ gal., tank car, f.o.b. New Orleans, and $26.50 delivered Memphis, truck.

Denver: Demand fair; trend steady; supply ample; 11¼¢ gal. New Orleans, $19.24 New Orleans, $21.50 f.o.b. West Coast.

Los Angeles: Demand good; trend steady; supply adequate; $21.50 bulk f.o.b. tank cars; $21.75 bulk f.o.b. trucks.

Ft. Worth: Demand fair; supply sufficient; blackstrap 12¼¢ gal., f.o.b. Houston; delvd. Ft. Worth truck $27.65, seller's market price on date of shipment.

Boston: Demand steady; supply plentiful; 12½¢ gal. in tank cars.

Minneapolis: Demand fair; trend steady; supply ample; $32.50, tank trucks, delivered.

Buffalo: Demand fair; trend steady; supply good; 16½¢, f.o.b. Albany.

Kansas City: Demand slow; trend steady; supply ample; 10¾¢@11¢ gal., tank car, New Orleans.

New York: Demand fair; trend steady; supply good; blackstrap 16¢ gal., tank cars, tank wagons, f.o.b. New York.

New Orleans: Demand good; supply ample; trend steady; 11¾¢ gal., tank cars and trucks; 600-lb. customers drums $8.26.

Atlanta: Practically no demand; trend steady; supply good; citrus $19@22.50 bulk, f.o.b. Florida producing mills.

St. Louis: Demand slow; supply ample; trend steady; 11¢ gal., New Orleans.

NIACIN

New York: Trend steady; $6 kilo, 10-kilo lots; $6.20 kilo, 5- and 2½-kilo lots; $6.30 kilo, 1-kilo lots; freight prepaid or paid to destination.

OAT PRODUCTS

Chicago: Demand fair; trend steady; supply adequate; carlots, reground oat feed, $16; No. 1 fine ground feeding oatmeal, $80; feeding rolled oats, $78@82.

Boston: Demand slow; supply spotty; white pulverized $56.50, reground oat feed $25.50 nominal.

Louisville: Demand slow; supply normal; trend easy to weak; reground $22.80, down $5; rolled $85.30, down 50¢; feeding $78.30, down 50¢; pulverized $53.80, up $1.50; crimped $69.30, down $1.

Philadelphia: Pulverized white oats demand slow; supply fair; $52.50; domestic demand slow; supply light; $28.50; Canadian oatfeed demand slow; supply very light; $27.50.

Memphis: Demand fair; trend steady; supply ample; 3½% protein, reground oatfeed, $23.25.

Portland: Demand good; trend unchanged; supply ample; rolled $66, ground $63, cleaned $65.

Ft. Worth: Demand slow; supply sufficient; 11% protein oat millfeed $40@41; reground $27@28, August.

Cincinnati: Demand poor; trend steady; supply adequate; reground oats $28, pulverized white oats $51, rolled oats $81.

Los Angeles: Demand slow; trend weaker; supply adequate; local production pulverized, $60 sacked.

Minneapolis: Demand on slow increase, supply adequate; trend steady to firm; feeding rolled oats $80, feeding oatmeal $68.50, standard pulverized $46, crimped $59, reground oatfeed $23.

OYSTER SHELL

Boston: Demand and supply steady; in paper $26.02.

Louisville: Demand fair; trend steady; supply normal; in 80 lb. paper $23.45, in 50 lb. paper $23.70, in 25 lb. paper $25.95.

Cincinnati: Demand fair; trend steady; supply adequate; $24.45.

Los Angeles: Demand fair; trend unchanged; supply ample; $14.80, sacked.

Portland: Demand good; supply ample; trend unchanged; western $34, eastern $39, granite grits $24, shell flour $28.

New Orleans: Demand and supply good; trend steady; $23@24.

PEANUT OIL MEAL

Milwaukee: Demand and supply fair; 26% $42.

Atlanta: Demand good; trend steady; supply none; 45% $59 nominal Georgia-Alabama producing mills.

PEAT MOSS

Boston: Demand and supply steady; $3.15 bale.

Los Angeles: Demand slow; supply adequate; trend unchanged; Canadian 6.1 cu. ft. bales $3.75.

Philadelphia: Demand slow; supply good; $2.70 f.o.b. pier.

Portland: Demand slow; supply ample; trend unchanged; $3.

Chicago: Demand fair; trend steady; supply ample; standard 7½ cu. ft. bales $3.80.

New York: Demand good; trend steady; supply fair; Canadian, 7 cu. ft. bale, veneer wrapped $3.32 f.o.b.; German, 7½ cu. ft. bale $2.85 at dock, New York.

POTASSIUM IODIDE, U.S.P.

Cincinnati: Demand good; trend steady; 90% KI in calcium stearate or carbonate mixtures: 250-lb. drums $1.35; 200 lb. in 100-lb. drums $1.35; 100-lb. drums $1.38; 25-lb. drums $1.41, f.o.b. Cincinnati.

Chittenango, N.Y.: Demand good; supply adequate; 90% KI stabilized with calcium stearate, 200 lb. in 100-lb. cartons $1.30; 100-lb. cartons $1.32; 25-lb. cartons $1.45; freight paid to destination.

POULTRY BY-PRODUCTS

Boston: Demand fair; supply spotty; $88.50 f.o.b. shipping point.

Ft. Worth: Demand excellent; supply very limited; 55% protein $95 f.o.b. north Texas plants.

Los Angeles: Demand fair; supply adequate; trend unchanged; $1.55 per unit of protein.

Atlanta: Demand fair; trend steady; supply good; meal $85.50, f.o.b. Georgia-Alabama producing mills.

Salisbury, Md.: Demand good; supply limited; meal $98, f.o.b. bulk, sacked $4 more.

RIBOFLAVIN

Cincinnati: Trend steady; feed grade (in feed supplements) 4¢ gm. in less than ton lots, in 3.36 to 16 gm./lb. mixtures; 3¢ in ton lots or more, freight prepaid or paid to destination.

New York: Trend steady; feed grade (in feed supplements) 4½¢ gm. in 3.36 to 16 gm./lb. mixtures, freight prepaid or paid to destination.

RICE BY-PRODUCTS

Los Angeles: Demand slow; supply tight; trend steady; California production high fat content rice bran $51 sacked.

Ft. Worth: Demand slow; offerings light; carlots, rice bran $33@34 f.o.b. south Texas rice mills, hulls $6.50 f.o.b. mills.

Atlanta: Demand fair; trend steady; supply good; bran $40@41 delivered.

SCREENINGS

Cincinnati: Demand fair; trend steady; supply adequate; ground grain screenings $34.

Ft. Worth: Demand fair; supply light; ground mixed grain $19.

Chicago: Demand improved; trend higher; supply fair; carlots, ground grain screenings $30.25, Canadian $25.40.

Minneapolis: U.S. buyers strongly resisting high prices of Canadian offerings, which are still very tight; very little domestic screenings; Canadian $22, Duluth; Canadian heavy $24, Canadian ground $26, lights $10@19, mediums $20@29, heavies $30@39.

Buffalo: Demand good; trend steady to higher; supply fair; ground $35.25 sacked New York, lake and rail; unground $30 bulk New York.

SOFT PHOSPHATE WITH COLLOIDAL CLAY

Atlanta: $20.40@20.67.
Buffalo: $25.31@25.45.
Chicago: $24.77@24.90.
Cincinnati: $23.47@23.60.
Des Moines: $25.33@25.35.
Kansas City: $24.88@25.
Memphis: $22.20@22.47.
Minneapolis: $25.92@26.06.
Philadelphia: $24.32@24.95.
St. Louis: $24.14@24.27.

SORGHUMS

Ft. Worth: Demand fair for domestic, good for export; supply sufficient; carlots, bulk No. 2 yellow milo $2@2.02 delivered Texas common points.

Los Angeles: Demand steady; supply adequate; trend easier; milo $2.30 per cwt. bulk.

SOYBEAN OIL MEAL

Chicago: The situation in this commodity here had something in common with that of the week preceding in that there was a further downward readjustment in price levels, with the 50% protein offerings coming in for the most reduction; the latter being down about $3@3.50 ton, while the 44% was being offered at $1@1.50 ton lower than a week ago. This easing trend in meal came in the face of reports of prospective decreases in crushing activity—incidental to seasonal shut-downs—both down-state and to some extent in Iowa and other surrounding states. With any extended period of the same kind of weather that the central areas of the bean belt have experienced the past week or so, we are not too far away from the start of the marketing season for new crop soybeans themselves and the selloffs in meal of the past couple of weeks could well represent the seasonal shift to a new crop basis. The Galvin estimate on soybeans as of Aug. 1 at 521,000,000 bu. compared with his month-ago intimation of 533,000,000 bu., which had been computed on an acreage considerably larger than what the government is now using. Quotations: 44% protein, Decatur basis, carlots: Unrestricted $54, and eastern restricted $51@51.50; 50% protein: Unrestricted $60, restricted $56.50@57.50.

Kansas City: Demand slow in this area but fairly good further east; trend steady to stronger; supply plentiful; meal for Kansas City $53@53.50 bulk, Decatur; unrestricted $54.50.

Minneapolis: Demand good; supply ample; trend steady; $51.50 bulk, Decatur, for shipment to Minneapolis.

Ogden: Supply normal; $84@89.

Cincinnati: Demand fair; trend steady; supply adequate; $54.50 bulk, Decatur.

Los Angeles: Demand slow; supply increased; trend weaker; $77.40@77.90 bulk.

Louisville: Demand slow; trend easy; supply fair; $65.20, down $1.90.

Boston: Demand slow; supply ample; 44%, $51; 50%, $56.50, both bulk f.o.b. Decatur.

Portland: Demand slow; supply limited; trend lower; $54 f.o.b. Decatur.

Omaha: Demand slow; trend steady; supply ample; 44% $58.60 bulk delivered Omaha.

Wichita: Demand fair; supply ample; 44%, $67; 50%, $75, f.o.b. Wichita.

Milwaukee: Demand good; supply fair; $53.50 bulk, Decatur.

Memphis: Demand fair; trend steady; supply good; prime 44% solvent, $61.50 sacked, f.o.b. Memphis.

Ft. Worth: Demand fair; supply sufficient; carlots, southern origin 44%: Aug. $69.60@70.60; 50% protein, Aug. $79@80; truck 44% $72 sacked.

Philadelphia: Demand and supply fair; trend unsettled; 44% $52 bulk, Decatur.

Denver: Demand good; trend firmer; supply fair; $73.14 sacked, Denver.

New Orleans: Demand slow; trend steady; supply ample; $69.50@70.

Atlanta: Demand fair; supply ample; trend steady; 44% $65 bulk delivered.

St. Louis: Demand slow; supply ample; trend steady; $62.

TANKAGE

Kansas City: Demand fair; supply moderate; trend steady; 60% digester $82.50, sacked.

Chicago: Demand good; trend easier; supply ample; 60% protein, in 100 lb. bags, $90.

St. Paul: Supply adequate; little trading; $82.50@88, nominal.

Wichita: Demand heavy; supply insufficient; 60% $92.50, f.o.b. plant.

Cincinnati: Demand good; trend steady; supply fair; 60% digester, $85 Cincinnati.

Omaha: Demand slow; trend steady; supply plentiful; $85.

Louisville: Demand dull; trend weak; supply good; $80@85.

Ft. Worth: Demand fair; supply short; 60% digester $85 Ft. Worth.

New Orleans: Demand good; supply light; trend steady; $97@102.

St. Louis: Demand slow; supply ample; trend lower; $83.

VEGETABLE AND ANIMAL FAT (HYDROLYZED)

Ft. Worth: Demand excellent; limited offerings; 5¾¢ per lb. f.o.b. north Texas area.

VITAMIN E FEED SUPPLEMENT

Cincinnati: Demand good; trend steady; any quantity in 100-lb. drums $1.50; in 25-lb. drums $1.55. Freight allowed to destination.

Rochester, N.Y.: Demand and supply good; trend steady; 100-lb. drums $1.50 lb., 25-lb. drums $1.55 lb., f.o.b. manufacturing plants, freight allowed and goods insured to destination.

New York: Demand and supply good; trend steady; 100-lb. drums $1.50 lb., 25-lb. drums $1.55 lb., f.o.b. manufacturing plants, freight allowed and goods insured to destination.

WHEAT GERM MEAL

Buffalo: Demand and supply fair; trend steady; commercial grade $56 sacked, f.o.b. Buffalo.

New Orleans: Demand and supply fair; trend steady; $60@62.

Minneapolis: Demand moderate; supply ample; $56.

PELLETING COSTS

(Continued from page 1)

these obstacles after the plant has been built and after the equipment has been installed.

"It is realized that, for the most part, these enterprises are small in comparison to other industries, and their overhead discourages the hiring of a permanent engineer.'

"Typical" Operation

Let us consider for the moment a typical pelleting operation which consists of mixing, pelleting, cooling and drying, crumbling (if necessary), and bagging or bulk storage.

"Assume the production average is 65 tons per eight hour day. In this typical case, we will use two examples, 'A' mill and 'B' mill.

"'A' mill average tonnage is 50 tons pellets and 15 tons meal per 10-hour day, as follows: One 2-ton and one 3-ton mixer, mixing capacity, 10 tons per hour; one 100 h.p. pellet mill, pelleting capacity, seven tons per hour; cooling and drying, seven tons per hour, and crumbling, seven tons per hour.

"Most pellets are shipped in bulk. Approximately 5% of the total is bagged.

"This mill has ample bin space for storage of pellets as well as rations awaiting pelleting.

"One production employee is responsible for mixing, operating the pellet mill, weighing out trucks, and making shipping tickets.

"'B' mill averages 60 tons pellets and seven tons meal, as follows: One 2-ton mixer, 7-min. cycle, mixing capacity, 16 tons per hour; two 100 h.p. pellet mills, pelleting capacity, 14 tons per hour; cooling and drying, 14 tons per hour, and crumbling, 14 tons per hour.

"Most pellets are bagged—approximately 15% bulk shipments.

"Seven production employees are required on this line.

"Unfortunately, 'B' mill, although apparently well planned from the capacity ratings above, is only producing 58% of standard. Why? Again we return to mill planning. In this instance it is the lack of bin space for pellet storage and for rations awaiting pelleting. A little foresight and an insignificant increase in capital outlay would have offset the costly delays being experienced at the pellet mills. The delays generally run from one to two hours per eight-hour shift.

"It is realized that with the many variables encountered when pelleting feeds, the job of supervising becomes very difficult, but it is also realized that with well directed utilization of both manpower and equipment, several of these variables will be eliminated, while others will be pin-pointed and action can be taken to reduce their impact on production.

"Since much of the performance of a pellet mill depends solely on the operator, it is believed that he should be subject to intensive training on the adjustment of the mill to compensate for variables such as humidity and other conditions of the formula.

"The costly 'trouble areas' that we are finding in the feed milling industry might be outlined as follows: (1) Poor plant layout and equipment requirements; (2) improper utilization of both manpower and equipment due to line imbalance; (3) lack of properly trained employees, and (4) no sound scheduling procedure."

Mr. Bohl said that suggested curative measures will be presented during the 1959 Feed Production School.

STORAGE STUDY

(Continued from page 1)

USDA has been under attack by House agriculture committee Democrats, charging that it has been making storage agreements under the Uniform Grain Storage Agreement which cannot be justified on the basis of cost per unit of grain held by the warehousemen.

The questionnaire, as proposed originally, is an eight-page document. It contains questions on occupancy record by commodity and acquisition and disposition of grain, including grain merchandised, feed grinding and mixing, custom drying and cleaning, grain handled only for Commodity Credit Corp. shipments, grain handled only for other customers, stored grain shipped against CCC loading orders and other activities not involving storage.

The original questionnaire also includes requests for the gross reve-

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nue received for each of these functions as well as a break-down of complete operating costs.

Secrecy Problem

There is the belief among sources in government and trade circles that any government—controlled by either a Democratic or Republician administration—cannot be relied upon to hold sacred or confidential the type of information that USDA hopes to obtain from warehousemen.

USDA officials aware of this apprehension say they are being attacked by hostile congressional sources on the grounds that the USDA does not know what storage costs may be and it is now seeking aid from the grain warehouse industry to provide a guide from industry reports.

Past experience with government pledges of secrecy have been found to be of little value. A somewhat naive trade concept is that such reports may be made if the USDA investigators will certify that such information will only be used by USDA in its compilation of cost studies and immediately destroyed.

What is essentially involved, trade sources say, is a breach of faith on the part of the federal government. In the past, USDA urged and promoted an increase in expansion of government storage. Now it appears that storage facilities have expanded far in excess of huge government stocks of grain.

It appears that what Congress is really saying to USDA is this: Now that you are in an excess supply situation of storage, it's time to drive down storage charges under provisions of the Uniform Grain Storage Agreement.

It can be observed that Secretary Benson is in no small part responsible for this condition, since his perhaps unwise front office went all out on a campaign in urban areas to show that the annual cost of storage of surplus agricultural commodities was now in excess of a billion dollars a year. This billion dollar slogan has now become a household estimate.

"Better Position"

Congress leveled its charges at USDA witnesses before its hearings on farm legislation, asking what they have to knock down storage costs. USDA officials recently said that now, since they are in a better negotiating position, some storage changes may be necessary in the Uniform Grain Storage Agreement next year. What this must mean is that the USDA was taken in by the warehouse industry when storage was acutely tight two years ago, but now it wants to drive a hard bargain under the push of Congress to reduce grain storage rates.

It was learned this week that Democratic members of the House agriculture committee have been receiving mail from constituents who call their attention to the USDA drive for expansion of storage facilities to hold under the price support programs the expanding production of surpluses made possible by legislation enacted by previous Democratic Congresses. They note the campaign issues of 1948 when the Democratic administration went out on its phony campaign to provide storage facilities to hold farmers' crops.

This report will not attempt to justify any level of charges for grain storage of government grain. There is in circulation a slogan of "Bid Basis for Storage," but this bid basis deal won't hold water. It would merely open up to irreparable damage the warehouse industry which has been something more than a repository of surplus government grain. The industry is a vital segment in taking farmer grain to market.

DRYING SEED

FARGO, N.D.—The highest drying-air temperature of a crop intended for seeding purposes should never exceed 110° F., according to specialists at the North Dakota Agricultural College, Fargo.

TOP OF HOPPER

(Continued from page 2)

they have, perhaps their enthusiasm to take it out of the hides of the warehouse industry may evaporate."

STRIKING SUCCESS with a new approach to fly control in laying houses was reported a few weeks ago. At the University of California cockerels have been put to work eating larvae that otherwise would become adult flies. Probably not a bad occupation for the cockerels, but the system has some implications of further lowering of the status of males in the animal world.

It's related, perhaps in only a remote way, to what was done to screwworm flies last year to help put the species out of business. Large batches of them were turned loose in the southeastern states after having been sterilized by radiation. They were supposed to be able to mate with "wild" flies, but the eggs wouldn't hatch. We don't recall the outcome of this program, but there's no doubt it did something to the personality of the male flies.

EGG PRICING IS OUTMODED, declares the extension service of the University of Rhode Island. "The central or terminal market for eggs is almost a relic of the past in the U.S.," a recent bulletin declares. "Yet, the pricing function in Chicago, for example, continues to be performed primarily by a very small number of old-line wholesalers and egg breakers whose business has dwindled to a tiny fraction or less than one half percent of the eggs marketed in the city. These firms buy eggs on wholesale grades, or ungraded, uncartoned, at or close to the quotations posted daily on the Chicago Mercantile Exchange."

Chains and independent distributors, which handle well over half of the Chicago egg supply, buy cartoned eggs directly from country assemblers, but they have no direct influence on Chicago egg quotations, the bulletin states. It notes that there is a growing need for reports on producer prices, prices paid by retailers for cartoned eggs and volume movement from farms to first receivers.

DELANEY AMENDMENT

(Continued from page 1)

fight to alter or amend the arbitrary Delaney Amendment.

In fact, there is some information that Delaney has been under substantial pressure to clarify or modify his arbitrary proposal which brought about the issuance of the FDA policy statement of two months ago.

Observers in Washington now believe that the Senate bill on color additives may take the center of the stage and compel a re-appraisal of FDA policy as recently issued on food additives. There is a strong belief that the Lister Hill Senate bill will prevail over the House measure on color additives, and if it does, it throws the Delaney Amendment to the food additive measures into a controversial cockpit which may provide ultimately some relief for the feed and chemical industry from the discriminatory chains which developed from the FDA statement of policy.

While this report does indicate hope of easement of conditions, it is not a report which should stir any enthusiastic optimism. On the contrary, conditions are touch and go.

ILLINOIS

(Continued from page 4)

bination of time and conditions under which to toast soybean meal.

The result has been a soybean processing method that increases the availability and utilization of certain amino acids by the chick. This tends to lower the protein requirement expressed as a percent of the diet.

Another factor affecting the protein needs of laying hens involves the energy level of the diet. We need experimental work that clearly shows the effect of energy upon the minimum protein content of laying rations, Dr. Bray said.

Slat vs. Solid Floors

Dr. G. F. Godfrey, executive director of Honeggers' & Co., Inc., Forrest, Ill., reported their experimental work comparing laying performances of hens on slat floors with those on solid floors. Hens on slats in this experiment produced 5% fewer eggs and had 4% higher mortality, he said.

Space allotted in the test varied from 1, 1.5 to 2 sq. ft. per bird. All the birds on slat floors averaged 225.9 hen housed eggs per bird, and 14.1% mortality. All birds on the solid floors averaged 241.6 hen housed eggs per bird, and 10.1% mortality.

This one test does not answer all the questions about slatted floors, Dr. Godfrey emphasized. However, he can recommend up to 70% of the floor space can be slats or wire. The birds on slats seemed to be more rough looking and more nervous than the ones on the floor, and he recommended debeaking for birds on slat floors.

Other discussions on the program included debeaking hens while they are laying, by S. F. Ridlen, university extension poultry specialist; mechanized egg production, by the Clint Park family of Warrensburg, Ill.; a report on the activities of the Illinois Egg Council and the Poultry & Egg National Board, and a panel of poultry research reports.

Highlight of the noon luncheon program was a broiler barbecue in the Livestock Pavilion.

Fire Damages Co-op Plant in Missouri

EUREKA, MO.—Defective wiring is believed to have caused the fire that swept through a mill and warehouses in Eureka July 29, causing damage estimated at $360,000. The plant was operated by the Farm Bureau Service Co. of Missouri.

Destroyed by the flames were a five-story wooden mill, a one-story warehouse, a section of another warehouse and a boxcar loaded with soybean meal.

A thermostat-operated siren was set off by the heat from the blaze at about 2 a.m., sounding an alarm that brought firemen from Eureka and the nearby communities of Ballwin, Pacific and Valley Park. Firemen soon began running low on water, but managed to replenish their supply by making connection with Eureka's new water system, which is not quite ready for general service.

The red glow of the flames could be seen as far as Manchester, Mo., 15 miles away. Motorists on Highway 66-50 turned off to see the blaze, which was brought under control in about two and a half hours.

H. D. McFarland is manager of the cooperative. He said the co-op had fire insurance.

Big Corn, Small Oat Crops Predicted for This Year by Galvin

CHICAGO—The August 1 estimate made by C. M. Galvin, private crop estimator of many years standing, calls for an out-turn of 4,161,137,000 bu. corn and 1,085,301,000 bu. oats. If his current estimates are borne out by the ultimate harvests of these two major feed grains, corn will be at an all-time high record, exceeding the 1958 production by more than 350,000,000 bu., while, on the other hand, oat production will be the smallest in 20 years. Only 936 million bushels of this cereal were harvested in 1939.

He set corn condition at 87% of normal or the same as last year. This came as somewhat of a surprise to some in the grain trade in view of the pessimistic comment that was filtering into the marketplace during the last half of July as the result of high temperature and deficient moisture experience in some of the more important portions of the Corn Belt.

Mr. Galvin went on to say that in the face of considerable dry weather during June and July in the central Corn Belt states, the corn crop has made rapid growth.

Good to excellent prospects also maintain, according to him, in the Southwest, and Mr. Galvin supplemented this statement with the observation that additional moisture would benefit the corn crop materially in the central and northwest Corn Belt states.

On oats, he attributed the lower production estimate to the smaller acreage for harvest than he had been anticipating up to last month.

Detailed figures showing prospective size of crops of corn and oats in the main producing group of states follow:

(final three ciphers omitted)

	Corn	Oats
Iowa	729,540	204,056
Illinois	655,488	80,712
Minnesota	381,150	143,357
Indiana	354,900	34,640
Nebraska	306,064	27,213
Ohio	251,162	51,747
Missouri	200,385	19,734
Wisconsin	170,312	139,752
Michigan	118,773	43,740
South Dakota	103,250	28,462
Others	890,113	282,488
Total	4,161,137	1,085,301

AFMA

(Continued from page 1)

amino acids upon the various compounds which affect metabolism of poultry. Among the 29 scientific papers he has published in the last three years is "Observations on the Cholesterol, Linoleic and Linoleinic Acid Content of Eggs as Influenced by Dietary Fat."

Dr. Fisher was born in Breslau, Germany. He came to the U.S. in 1941 and settled on a poultry farm in Vineland, N. J. He attended Vineland High School and graduated in 1946. Dr. Fisher then entered Rutgers University, receiving his B.S. degree in 1950, and his M.S. degree from the University of Connecticut in 1952. His Ph. D. degree was conferred at the University of Illinois in 1954. He joined the Rutgers staff as assistant professor of poultry nutrition immediately thereafter. His present appointment followed in 1957. Dr. Fisher is the 12th poultry scientist to receive the annual AFMA poultry nutrition award. Previous winners were: Dr. Fredric W. Hill, Cornell University (1958); Dr. Lloyd D. Matterson, University of Connecticut (1957); Dr. J. S. Slinger, Ontario Agricultural College (1956); Dr. H. M. Scott, University of Illinois (1955); Dr. E. P. Singsen, University of Connecticut (1954); Dr. G. F. Combs, University of Maryland (1953); Dr. M. L. Scott, Cornell University (1952); Dr. J. R. Couch, Texas A&M College (1951); Dr. W. W. Cravens, University of Wisconsin (1950); Dr. James McGinnis, State College of Washington (1949) and Dr. H. R. Bird, U.S. Department of Agriculture (1948).

Firm Develops Supplement Plan for Cattle on Grass

GREAT FALLS, MONT.—Feeding a pelleted, fortified supplement to yearlings and two-year-old feeder cattle on grass is being promoted by Montana Flour Mills Co., Great Falls, in a current program aimed at ranchers.

Dr. William H. Burkitt, director of nutrition for the company, says the range supplement program recommendations and expected response are based on results of rancher demonstrations under many different conditions over a period of years.

"From seven years' field work with ranchers on Montana Flour Mills' Ceretana program," he said, "the following conclusions can be drawn:

● "Generally, a nice response from this program can be expected any time after July 1, or whenever the grass matures and starts to dry.

● "Two pounds of Molas-O-Cake per head per day appears to give the rancher the maximum return on his investment.

● "With 2 lb. of Molas-O-Cake supplementation per head per day, the rancher can logically expect an increase of anywhere from a minimum of .5 lb. per head per day up to 1 lb. per head per day over gains on grass alone.

● "On the above figures, this amounts to only 200-400 lb. of pellets for every 100 lb. of extra gain.

● "On the above figures and with current prices, the supplement cost per 100 lb. of extra gain would range from $7.50 to $15. (With this year's indicated feeder cattle prices, the value of that extra gain is worth two to three times the cost of the Molas-O-Cake to put it on.)

● "Premiums have been paid for feeder cattle pelleted on grass . . .

● "Feeder cattle pelleted on grass may shrink less at marketing. Although we have not been able to obtain figures on it, it is logical to assume that cattle that have been pelleted on grass will shrink less in transit. This could be due to two reasons: (1) They are in better shape nutrition-wise and (2) cattle fed these pellets are quite gentle and do not get as nervous or excited when handled or when around strangers . . ."

Reviewing information on the Ceretana summer and fall supplementation program presented at 24 June meetings for ranchers sponsored by Montana Flour Mills, Dr. Burkitt outlined the following points:

"1. Grass and range forages change in chemical composition from spring through summer into the fall. This change involves marked decreases in protein, phosphorus and carotene or vitamin A. Many other changes occur and we sum it up by calling it loss in 'green grass nutrition.'

"2. The importance to (ranchers) of this change in grass and forage composition is the effect that it has on the gains of cattle grazing on these grasses and range forages. Information was presented under plains, foothill, mountain, dry land and irrigated conditions, proving that gains of grazing cattle (whether it be yearlings, two-year-olds, cows, calves, steers or heifers) decrease from spring through summer into the fall. That is, whatever their gain is on early green grass in May and June, their monthly gain will decrease from then on until marketing time in the fall. This decreased gain is a universal trend under all conditions as far as is known.

"3. Information was given (at the meetings) showing why supplements such as cottonseed cake, grains, beet pulp or combinations of these types of ingredients are not satisfactory as supplements for grass that has lost its 'green grass nutrition.' Such supplements provide part of the missing nutrition, but not all of it. Figures proving that cottonseed cake does not hold up the rate of gain in cattle in the summer and fall months were presented.

"4. Figures were presented proving beyond all doubt that 'more grass' (lighter stocking rate) is not the answer to holding up gains in summer and fall months. Regardless of the amount of grass that cattle have access to, if the nutrition is not in the grass, they cannot eat enough of it to realize their potential to gain . . .

"5. Results of rancher demonstrations using balanced, fortified supplements to hold up gains in summer and fall months were presented. These demonstrations covered the period of the last seven years with most of them being conducted by ranchers in Montana. Results of demonstrations conducted in Colorado, Wyoming and Idaho were also presented.

"In these demonstrations, ranchers carried two groups of cattle on as nearly similar pasture as possible. One group was supplemented with fortified, balanced pellets and the other group received no supplements.

"In most cases, ranchers divided the cattle, selected the pastures and took the beginning and final weights themselves. In most of the tests our regular Ceretana 20% protein fortified Molas-O-Cake was used as the supplement.

"Information was presented showing that the more grass that is available for cattle to work on, the greater is the response from the supplement."

Dr. Burkitt said most ranchers using the Ceretana program are feeding Montana Flour Mills' "regular, giant size, wafer-type pellet and feed it right on the ground, thereby eliminating the necessity for feed bunks."

COASTAL BERMUDA

(Continued from page 6)

drator has a capacity of one ton of dry material per hour.

Coastal Bermuda grass has been accepted by many farmers, experiment station workers, extension workers and others as a high yielding forage crop adaptable to many sections of the Southeast. It is, with proper fertilization, capable of producing a feed product with high nutritive values. One of the major problems is the full and efficient utilization when fertilized to produce high yields with concurrent high nutritive values.

A great amount of interest has been expressed by farmers, feeders, feed processors and others recently in the potential of some processing method which would capture and retain the latent nutritive qualities found in this grass when fertilized for high production. Because of the high cost of alfalfa and other forages and forage products from other producing areas to feeders and feed processors in the Southeast, and because of the apparent success of western and midwestern farmers in dehydrating and pelleting alfalfa and other forages, interest has been primarily directed toward the potential of similarly processing Coastal Bermuda.

Only a broad and extensive research program in the future will give adequate answers to many problems. Such a program is currently under way by the South Carolina Agricultural Experiment Station. This program will include work on such basic problems as plant operation, economic evaluations, animal performance and stability of pellets—both physical and chemical—in storage.

Grain Executive Dies

HUTCHINSON, KANSAS—A. W. Estes, president and manager of the Midwest Grain Co., died July 18, as the result of a heart attack suffered four days previously.

Chicks Placed in Principal Broiler Areas

(000's omitted)

Week ending	Maine	Conn.	Penn.	Ind.	Ill.	Mo.	Del.	Md.
May 30	1,267	633	786	759	135	670	1,753	1,832
June 6	1,275	482	844	872	123	733	1,699	1,832
June 13	1,310	590	913	810	100	742	1,755	1,905
June 20	1,228	635	677	831	110	839	1,742	1,869
June 27	1,263	568	735	862	136	799	1,694	1,963
July 4	1,186	620	814	778	99	818	1,722	2,001
July 11	1,222	551	719	854	106	754	1,778	1,894
July 18	1,202	607	833	825	129	908	1,591	2,055
July 25	1,212	629	707	878	108	865	1,625	2,001
Aug. 1	1,160	638	718	797	111	845	1,550	1,898

Week ending	Va.	W. Va.	N.C.	S.C.	Ga.	Fla.	Ala.	Miss.
May 30	1,223	723	2,998	365	6,951	188	3,404	2,465
June 6	1,243	575	3,016	351	7,002	178	3,413	2,485
June 13	1,168	658	3,037	338	6,961	223	3,461	2,533
June 20	1,322	533	3,019	339	6,807	231	3,470	2,439
June 27	1,124	529	2,926	357	6,922	206	3,461	2,256
July 4	1,066	521	2,981	327	6,776	225	3,406	2,464
July 11	993	550	2,919	351	6,573	172	3,394	2,370
July 18	1,117	565	2,930	366	6,554	160	3,363	2,292
July 25	1,272	515	2,764	354	6,298	187	3,295	2,214
Aug. 1	1,026	484	2,576	331	6,033	144	3,177	2,132

Week ending	Ark.	La.	Texas	Wash.	Oregon	Calif.	Total 22 areas 1959	Total 22 areas 1958
May 30	3,501	423	2,200	371	227	987	33,892	36,532
June 6	3,551	400	2,312	377	268	1,033	34,087	36,562
June 13	3,546	448	2,306	374	276	978	34,359	36,900
June 20	3,398	468	2,299	384	247	1,103	33,990	36,889
June 27	3,231	487	2,367	341	262	1,108	33,597	36,237
July 4	3,580	449	2,250	332	243	1,015	33,673	35,436
July 11	3,525	386	2,301	306	238	1,021	32,977	34,912
July 18	3,483	354	2,157	351	203	945	32,990	33,846
July 25	3,597	423	2,142	303	237	1,045	32,671	33,378
Aug. 1	3,358	363	2,250	287	213	872	30,963	32,440

Five-State Turkey Hatchings Decline

ST. PAUL, MINN. — Hatchings of heavy white, other heavy and light breed turkey poults in the five leading turkey producing states during the week ended July 25 were below hatchings of the week earlier, according to the Minnesota Department of Agriculture.

The five states—Ohio, Minnesota, Missouri, Virginia and California—hatched 264,000 heavy white, 9,000 other heavy and 301,000 light breed turkey poults during the week reported.

Heavy white hatchings were down 28% from the previous week, but were 9% above the same week a year ago. Production of bronze turkeys dropped sharply from the week before, and was less than half as great as the output during the corresponding week in 1958. Light breed poults hatched showed a decrease of 6% from the previous week, and were down 8% from last year.

Settings for the five states totaled 306,000 heavy whites, 21,000 other heavy (bronze) and 350,000 light breed turkey eggs during the week. Heavy white settings were 21% below the previous week, but 25% higher than a year ago. Heavy bronze settings, confined to California only, were up 5,000 from the week before. The light breed set, down 26% from the previous week, was 16% lower than in 1958.

Ewing Firm to Open New Plant in Iowa

AMES, IOWA — Ray Ewing Co., Pasadena, Cal., is opening a new plant installation here to replace an installation now operating at Boone, Iowa, according to Wendell Wescoat, plant manager. The change is being made to provide facilities for expansion, he said.

The Ewing firm, which manufactures vitamins and antibiotic feed premixes for wholesale distribution to feed companies, has its main office in Pasadena and plants in Pasadena; Council Bluffs, Iowa; Fort Worth, Texas, and Lancaster. Pa. The Boone plant will be dismantled and the equipment shipped to Lancaster.

Advertising Council To Meet Sept. 17

The next meeting of the Midwest Feed Advertising Council will be held Sept. 17 at the Sheldon-Munn Hotel in Ames, Iowa, in connection with the Iowa College-Feed Industry Conference at Iowa State University. Feedstuffs in a news story last week incorrectly reported the date of this meeting as Sept. 7.

Texas A&M Program To Stress Marketing Of Crops in Beef

COLLEGE STATION, TEXAS—A program stressing cattle feeding as a means of marketing abundant feed crops on hand and in prospect has been planned for the Beef Cattle Short Course to be held Aug. 10-12 on the campus of Texas A&M College here, according to an announcement by Prof. John K. Riggs, in charge of beef cattle.

The program will present information on feed preparation and ration formulations and discussions of Texas resources for cattle feeding and outlets for consumption of beef produced.

A half day session will be devoted to beef cattle breeding problems. There also will be a session dealing with diseases and parasites, with particular emphasis on the new brucellosis eradication program and prospects for screwworm eradication. The annual steer carcass contest, initiated three years ago, will be carried out with steers entered from all parts of the state.

Twenty-five authorities have been secured to present the program. Visiting speakers who will appear in addition to members of the Texas A&M staff include: Dr. H. H. Stonaker, noted beef cattle breeding specialist and head of animal husbandry work at Colorado State University; Norman Moser, president, Texas & Southwestern Cattle Raisers Assn.; Kenneth R. Fulk, executive secretary, American Shorthorn Assn.; Dr. J. R. Stouffer, animal husbandry department, Cornell University, and Clayton Stribling, Llano, Texas, rancher.

The Aug. 10 program will include a talk on creep feeding. Feeding topics scheduled for Aug. 11 are formulating rations for fattening cattle, the effect of pelleting on performance and feed utilization of beef cattle, high moisture grain sorghums for finishing cattle and the use of feed additives.

During the evening of Aug. 11, one of four question sessions will be devoted to cattle feeding and nutrition.

General Mills to Start New Research Center

MINNEAPOLIS—Bids on the construction of the first phase of the new General Mills research center to be built in Golden Valley, Minn., are now being reviewed, the company announced.

Under General Mills' program, phase one calls for building the central unit of the research center to be ready for occupancy in 1960. It is an expandable design, complete in itself, but with various wings to be added later as the need and circumstances may warrant.

MARKETS

(Continued from page 2)

from that of the week preceding. While most of the commercial mixed feed manufacturers are reporting that they are on a five-day operating basis, there are a few that have been compelled to cut back to some degree and have been operating on a 32 rather than a 40-hour week basis.

There has not been much of anything in the picture to stimulate heavier buying operations by feed users. Hogs have been holding only steady with the Chicago top still around the $15 mark. But, at the same time, if the June pig survey meant anything and is borne out at farrowing time, many well-informed people are looking for a lower price range in the months to come, all of which could not help but exert impact on the demand for mixed feeds of a commercial type.

Egg and broiler markets are both up from the lows but are still a long way from being at levels to afford much optimism among feed manufacturers. Cattle feed has been moving in a seasonal way.

South Central

Business has held up fairly well this week despite a lower volume of hog feed sales. Most of the mills are on a five-day basis, some selling the full output without any strain, while others admit making a little more feed than they are delivering. There is no doubt that hog feed sales have turned down and are likely to hold at a lower level for a time. However, most of the loss in hog feed deliveries this week has been counter-balanced by a sharp increase in dairy feed sales. Hot dry weather over much of the nearby area has cut carrying capacity of pastures enough to force purchase of dairy feeds. Several spokesmen indicated that they expected a slowdown in business to turn up shortly. Dairy feed sales would slow down quickly following a change in the weather, they say, and there is little chance of any other feed picking up the slack.

Ohio Valley

Formula feed sales drifted to slightly lower levels this week in the Ohio Valley, with manufacturers reporting a general inclination by retailers to reduce their stocks to minimum tonnages in the belief that a widespread downswing in prices is likely during the approaching early fall weeks.

A contributing factor in the current lack of interest in formula feed purchases by many thousands of valley farmers is their much greater interest in attending one or more of the county fairs now being held in scores of communities. Attendance at these fairs provides an annual holiday and get-together that farmers will not pass up, regardless of the crop or farm animal situation.

It was indicated this week that the previously-predicted record corn crop this fall is not now possible because of the early summer drouth. While rainfall during the last fortnight has amounted to two or more inches, extensive areas in Ohio, Kentucky and Indiana are said to be still "critically short" of subsoil moisture.

Although supplies this mid-week of both live and dressed poultry were reported barely sufficient to meet wholesale market requirements, prices remained steady. The same situation was noted with respect to eggs of all sizes and grades.

Pacific Northwest

Feed ingredient prices were irregularly lower this week in the Pacific Northwest influenced by varying supply and demand conditions. Buying interest for some items slackened seasonally with the availability of new crop feed grains, fairly good pasturage and forage crops. A very spotty trade prevailed with buyers not inclined to anticipate requirements very far forward. The poultry line of brand feeds moved out fairly good, but not up to expectations due to disappointing feeding ratios. Dairy feed sales slowed down seasonally.

Wheat millfeeds was the exception this week with a rather sharp jump of fully $2 ton. Extremely tight supplies bolstered this market with exporters providing interest to cover earlier sales to Japan. Whole corn and milo prices were up $1 and 50¢ ton, respectively, with the local situation following action at eastern shipping point markets.

Oilseed meals, meat and bone meal and the balance of the feed grain lists turned weaker with ample offerings available and a seasonally slow buying interest. Soybean meal dropped $2.50 ton, meat and bone meal from $5@7.50, while the feed grains averaged about 50¢ ton under the previous week.

Continued cool weather prevailed throughout the Pacific Northwest region and offered relief from earlier high temperatures. There was no precipitation of consequence in western Oregon and Washington and pasture conditions remained vulnerable to a sudden turn to hot, dry conditions.

Mountain States

The opinion of the different formula feed dealers contacted this past week is that their sales volume is more or less steady compared with the previous week, and is almost the same as a year ago at this time.

The feeds that have been getting the most demand in this week's business are drylot cattle feeds. The demand for this has remained the same as the previous week.

All of the feed purchased at this time is being used for immediate sale.

FEED FIRM INCORPORATED

LITTLE ROCK, ARK.—The Farmers Elevator-Warehouse, Inc., Newport, Ark., has filed articles of incorporation to operate a "feed, feed production and seed business." The new firm was authorized 1,000 shares of no par value stock and listed $300 in paid-in capital. Incorporators are David Owen, R. Owen Burton and Wayne and Ruth Collier, all of Newport. Fred M. Pickens of Newport was named agent.

Daffin Forms New Industrial Division

LANCASTER, PA.—Daffin Manufacturing Co., Lancaster, has announced the formation of a new sales division to market many of the firm's products in the industrial field, according to Irl A. Daffin, president of the firm.

He said the increasing demands for many of the products developed by his organization for use in the feed and grain field are finding increased application in the chemical, pharmaceutical and general materials handling branches of industry.

George E. Sprackling, secretary of Daffin, has been appointed to head the new industrial division, which will market the following Daffin products throughout the U.S. and Canada:

Daffinaire pneumatic materials handling equipment, including one-way and two-way conveyors; pneumatic bulk truck unloader kit; MacLellan batch mixers; Daffin pelleting machines; Daffin "Packaged" mills, and Daffin industrial hammermills.

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One of the many Honegger Associate Hatcheries serving Canada.

WOLCOTT FEED & HATCHERY
United States

One of the more than 130 Honegger Associate Hatcheries serving United States.

FIRMA DE RYCKE
Europe

European headquarters serving over 100 Honegger Associate Hatcheries in Europe and Middle East.

SUNBEAM HATCHERY
Mexico

One of the fine Honegger Associate Hatcheries serving Mexico.

KENIN CHICKS
South America

One of the fine Honegger Associate Hatcheries in British Guiana serving South America.

Satisfied customers mean . . .

Ready markets . . . increased sales

AT HOME AND ABROAD, this high-producing, award-winning HONEGGER LAYER is earning an indelible stamp of approval with poultrymen, large and small . . . . proving that the HONEGGER LAYERS are good business for everyone.

SATISFIED CUSTOMERS of HONEGGER LAYERS creates a ready market . . . . increased sales . . . . increased feed tonnage.

BUILD YOUR FEED TONNAGE WITH THE INTERNATIONALLY FAMOUS HONEGGER LAYER. HONEGGER LAYERS are produced and distributed coast to coast . . . . on the European continent . . . . the Middle East . . . . Africa . . . . Mexico and throughout Canada by an efficient network of carefully selected ASSOCIATE HATCHERIES. Wherever you see the Honegger emblem . . . . around the world . . . . you can rely on them for genuine HONEGGER LAYER CHICKS.

DO AS HUNDREDS OF OTHER GOOD DEALERS have done . . . . line up with one of the world's outstanding egg laying strains . . . . the Honegger Layer. Someone will profit by increased feed tonnage from this ready market . . . . it might as well be you.

Write for complete details. . . . Do it today!

Consistently good year after year

HONEGGER Layers

HONEGGERS'

BREEDER HATCHERY

FORREST · ILLINOIS